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Skeptical Inquirer

THE MAGAZINE FOR SCIENCE AND REASON

Vol. 39 No. 1 | January/February 2015

UNDERSTANDING STRANGE BELIEFS

Why the Supernatural?
Why Conspiracy Ideas?

Modern Geocentrism: Pseudoscience in Astronomy

Flaw and Order: Criminal Profiling

Sylvia Browne's FBI File

More Witch Hunt Murders

INTRODUCTORY PRICE U.S. and Canada $4.95

0 71486 02614 3

Published by the Committee for Skeptical Inquiry

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Skeptical Inquirer January/February 2015 | Vol. 39, No.1

38
Why Do People Believe in Gods?
And Ghosts, Angels, Demons, Fairies, Goblins, and Other Imagined Conspiracies?
GARY M. BAKKER

44
Crazy Beliefs, Sane Believers
Toward a Cognitive Psychology of Conspiracy Ideation
PRESTON R. BOST

50
Modern Geocentrism
A Case Study of Pseudoscience in Astronomy
MATTHEW P. WIESNER

54
Flaw and Order: The Science and Mythology of Criminal Profiling
LAURENCE MILLER

SPECIAL REPORT

12
Sylvia Browne's FBI File
Examining Her Alleged Detective Work and a Federal Criminal Investigation
RYAN SHAFFER

COMMENTARY

36
In Defense of Useless Math: Why the New Common Core Isn't As Liberating As It Seems
DALE DEBAKCSY

REVIEWS

Historical Revisionism in *Tim's Vermeer*
EVE SIEBERT 61
Tim's Vermeer Directed by Raymond Teller. Written by Penn and Teller.

COLUMNS

FROM THE EDITOR
Why We Believe: New Research, New Understanding 4

NEWS AND COMMENT
Witch Hunts Lead to Murders in India and Tanzania / Astronomer J. Dommanget of Belgian Comité PARA Dies at Age Ninety / Aboriginal Cancer Treatment Controversy in Canada/'Ghost' Caught on New Mexico Police Video—Again /'Psychic' Sally Morgan Scuffles with U.K. Skeptics 5

MARTIN GARDNER CENTENNIAL
The False Memory Syndrome
MARTIN GARDNER 16

INVESTIGATIVE FILES
Monster Catfish: Investigating a Whopper
JOE NICKELL 20

THINKING ABOUT SCIENCE
Science and Skepticism, the Big Picture
MASSIMO PIGLIUCCI 23

PSYCHIC VIBRATIONS
The Trent UFO Photos—'Best' of All Time—Finally Busted?
ROBERT SHEAFFER 25

NOTES ON A STRANGE WORLD
The Amazing Randi's Most Extraordinary Escape, Part 2
MASSIMO POLIDORO 28

SCIENCE WATCH
Diet-Heart: A Hypothesis in Crisis? Part 1: From Proposal to Paradigm to Policy
KENNETH KRAUSE 31

SKEPTICAL INQUIREE
The Cockington Church Ghost Photo
BENJAMIN RADFORD 34

NEW AND NOTABLE 60

LETTERS TO THE EDITOR 64

THE LAST LAUGH 66

Bigfoot or Big Fraud?
ROB BOSTON 59
Sasquatch for Sale: Death, DNA, and Duplicity by Michael Greene

[FROM THE EDITOR

Why We Believe: New Research, New Understanding

Many of our articles and columns are investigative—scientific investigation into questionable claims being the core of what we do. But, as I have said before, an equally valuable approach is explanatory—drawing upon research to better understand and explain the reasons why the ideas that we examine have such a strong hold on vast segments of the public. Without such insights, skeptics can become overwhelmed with bewilderment at what they often misperceive as just ignorance or gullibility.

To lead off this issue we offer two such explanatory articles. Both draw upon copious recent scholarly research to help us understand the power of beliefs and the ingrained, and natural, human mental processes that lead to them.

In "Why Do People Believe in Gods?…and Ghosts, Angels, Demons, Fairies, Goblins, and Other Imagined Conspiracies?," clinical psychologist Gary M. Bakker first considers a number of psychological and evolutionary explanations for why intelligent people believe in supernatural concepts. Most lack full explanatory power. He then describes recent psychological research now converging on a "substantial explanation for belief in supernatural agents"—a built-in human tendency to treat all objects and behaviors as existing for a purpose. These profound teleological—or purpose-based—intuitions are shared by all of us from a very early age, and even scientists and other trained people can lapse back into them.

In "Crazy Beliefs, Sane Believers," psychology professor Preston R. Bost synthesizes an extraordinary amount of new research over the past five years that helps explain the psychological underpinnings of conspiracy beliefs. Again, because conspiracy beliefs are almost mainstream, it is important to understand how they arise and gain such a strong hold. Suspicion is a valuable human trait that helps us avoid being taken advantage of. When feelings of intentional agency, vulnerability, and lack of control loom large as intensifying triggers, conspiracy ideation can be a natural consequence. Bost hopes his analysis may help shift the conversation slightly from "the image of foil-hat-wearing, conspiracy-believing 'other people' to a more forgiving conception of conspiracy ideation arising in normal people exposed to proper triggers."

* * *

In July 2002, evolutionary biologist and botanist Massimo Pigliucci came to me with a proposal for a new regular column. It would be short (800 to 900 words) and focus on issues of scientific methodology in research, both in skepticism and more generally in science. He would "alternate between conceptual columns and some tied to actual examples of research in skepticism or science to illustrate what works and what doesn't." His "Thinking about Science" column has graced our pages over the past twelve years in SI, illuminating many of the central issues scientific skeptics cope with. Along the way Massimo got a third (!) doctorate, in philosophy, and is now the K.D. Irani Professor of Philosophy at the City University of New York. With these new duties, he is concluding his column, with an important final entry in this issue, "Science and Skepticism, the Big Picture." We thank him for his insights and look forward to more SI writings from him in other formats.

—Kendrick Frazier

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The Skeptical Inquirer is the official journal of the Committee for Skeptical Inquiry, an international organization.

The Skeptical Inquirer (ISSN 0194-6730) is published bimonthly by the Committee for Skeptical Inquiry, 3965 Rensch Road, Amherst, NY 14228. Printed in U.S.A. Periodicals postage paid at Buffalo, NY, and at additional mailing offices. Subscription prices: one year (six issues), $35; two years, $60; three years, $84; single issue, $4.95. Canadian and foreign orders: Payment in U.S. funds drawn on a U.S. bank must accompany orders; please add US$10 per year for shipping. Canadian and foreign customers are encouraged to use Visa or MasterCard. Canada Publications Mail Agreement No. 41153509. Return undeliverable Canadian addresses to: IMEX, P.O. Box 4332, Station Rd., Toronto, ON M5W 3J4.

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Subscriptions and changes of address should be addressed to: Skeptical Inquirer, P.O. Box 703, Amherst, NY 14226-0703. Or call toll-free 1-800-634-1610 (outside the U.S. call 716-636-1425). Old address as well as new are necessary for change of subscriber's address, with six weeks advance notice. Skeptical Inquirer subscribers may not speak on behalf of CSI or the Skeptical Inquirer.

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Witch Hunts Lead to Murders in India and Tanzania

Benjamin Radford

While many people think of witch hunts as dusty relics of a bygone age, the persecution, torture, and execution of suspected witches continues to the present day in many places. For example, in July 2014, forty-five-year-old Saraswati Devi, a resident of a small Indian village near Nepal, was accused of being a witch after a local mystic identified her as having practiced black magic. Over a dozen villagers beat Devi to death as punishment while her two children tried to intervene.

The problem is especially bad in India; according to a report in the February 23, 2014, issue of the Indian newspaper *Mint*,

> The National Crime Records Bureau says 2,097 murders were committed between 2000 and 2012 where witch hunting was the motive. . . . Once practiced only by tribal communities, witch hunting is now becoming common among Dalits and other minority communities. The idea of a witch is common across all the affected [Indian] states. They are thought to possess an evil eye or mouth, they eat humans, kill cattle, destroy crops, and cause illness. But witch hunting is not just the result of such superstition. Family disputes over property, land rights of women, and village-level and gender conflicts are some of the other reasons for witch hunts in India, historians say.

In many parts of the world belief in witches is common, and black magic is considered a normal part of everyday life. A 2010 poll of eighteen countries in sub-Saharan Africa found that over half of the population believes in magic. Witch doctors are consulted not only for healing diseases but also for placing or removing curses or bringing luck. It is not unusual for people to consult witch doctors seeking magical assistance when preparing for a job interview, starting a business, or seeking a mate. Those who are seen as having positive roles in rural, non-Western communities (such as witch doctors and traditional healers) are often involved in identifying and persecuting innocent women as witches. Once mystical methods are used to "verify" who is a witch, the justice can be gruesome, including banishment, rape, disfigurement, torture, and death.

Accusations of witchcraft are a complex sociocultural phenomenon and involve many factors. Belief in magic is certainly an essential element, but the persecution of witches often involves issues of gender, race, and class.

Belief in witchcraft has led to horrific murders and mutilations in recent years outside of India, including in South America and East Africa. In 2008, a mob of hundreds of young men killed eight women and three men in rural Kenya. The victims were accused of witchcraft—having supposedly cast spells that lowered the intelligence of the village's children. In some cases the body parts of albinos—those afflicted with the skin pigmentation disorder—are sought after for use in magic spells and rituals. (See "Body Parts Stolen from African Hospital for Magic Use," SI, News and Comment, March/April 2014.)

In October 2014 seven people in the East African country of Tanzania were killed following accusations of witchcraft. According to the *Mail and Guardian*, "'They were attacked and burnt to death by a mob of villagers who accused them of engaging in witchcraft,' the police chief for the western Kigoma region, which borders Burundi, Jafari Mohamed, told *Agence France-Presse*. . . . Among those ar-

rested on suspicion of carrying out the killings was the local traditional healer, or witchdoctor."

The victims, most of whom were elderly, were burned alive and in some cases hacked to death with machetes. Nearly two dozen people were arrested, and the fact that a witch doctor was among them is not unusual. It's not clear what sparked the attack, but often witchcraft accusations follow some unexplained misfortune such as an accident, a sudden sickness, or a village drinking well drying up. If there is no obvious, immediate explanation, the event may be blamed on a suspected witch—usually a women or an elderly person. Other times the witchcraft accusations are used as a pretext to settle personal grudges or confiscate the victim's property.

The belief in and persecution of witches is universal and dates back millennia. Often all that is needed is a belief in magic, though sometimes witchcraft is prohibited by organized religion. The Christian bible, for example, explicitly calls for accused witches to be put to death per Exodus 22:18, which states, "Thou shalt not suffer a witch to live" (KJV).

Accusations of witchcraft are a complex sociocultural phenomenon and involve many factors. Belief in magic is certainly an essential element, but the persecution of witches often involves issues of gender, race, and class. Most of the Indian women are poor and of low caste. Brian Levack, professor of history at the University of Texas at Austin and author of *The Witch-Hunt in Early Modern Europe* (2006), notes that the targeting of women (and of lower-class women in particular) was prevalent in early European witch hunts: "we can be fairly certain that the great majority of those persecuted came from the lower levels of society . . . the mere fact that so many witches were unattached women of no apparent social distinction points to this conclusion."

The same was true in many other places. Levack notes,

> In New England the great majority of women accused of witchcraft before the Salem episode of 1692 were dependent members of the community who qualified for poor relief. . . . In Norway, where large numbers of accused witches were described in trial records as extremely poor, most of those who were actually convicted were beggars. There are a number of reasons why the people who filled the lower ranks of society incurred accusations of witchcraft. Poor people, especially poor women, were the weakest and most vulnerable members of society.

Lawmakers in India, Tanzania, and elsewhere have begun to address the problem, but the roots of these superstitions are centuries old and may never be eliminated.

Benjamin Radford is deputy editor of the Skeptical Inquirer and author or coauthor of seven books on media literacy, skepticism, and critical thinking.

Astronomer Jean Dommanget of Belgian Comité PARA Dies at Age Ninety

Jean Dommanget died on October 1, 2014, at the age of ninety. He was an astronomer and head of the Département Astrométrie et Dynamique des Corps Célestes at the Royal Observatory of Belgium. He was an internationally acknowledged specialist in the domain of double stars and a longtime scientific consultant to the Committee for Skeptical Inquiry.

He joined the Comité PARA in 1960. Comité PARA is the Belgian Committee for the Scientific Investigation of Purported Paranormal Phenomena, founded in 1949. He immediately took a significant part in its activities, in particular when the "Signal du Sourcier" (Prof. Yves Rocard) and "l'effet Mars" ("The Mars Effect" of Michel Gauquelin) were investigated by the committee.

Dommanget was president of the Comité PARA from 1980 to 2007. He took care from then until 2009 of the drafting of the *Nouvelles Brèves*, an annual publication of the committee. It was through his initiative that a book titled *La Science Face au Défi du Paranormal* was edited to celebrate the fiftieth birthday of the committee. The book, of which he wrote several chapters, describes the history of the committee, the experiments it conducted, and the paranormal beliefs it examined. He gave many lectures about astrology and other subjects and participated in several TV shows battling against supporters of the paranormal. He made frequent interventions in the media to denounce the false claims of the paranormal.

Dommanget resigned the presidency of the Comité PARA at the end of 2007 and became vice president for three years. After his vice-presidential term he ceased his activities within the committee to devote himself to research on the orbits of double stars undertaken fifty years earlier at the Observatory.

Jean Dommanget was an affable, competent, enterprising, and firm man who devoted himself for more than thirty years to defending reason and to allowing the Comité PARA to achieve its mission. We will not forget him.

— Comité PARA

Aboriginal Cancer Treatment Controversy in Canada

Paul Benedetti

For the second time in 2014, Canada's McMaster University Children's Hospital found itself locked in a battle with aboriginal parents who took their respective daughters off chemotherapy and turned to alternative medicine and traditional aboriginal healing.

In October the Hamilton, Ontario-based hospital took child welfare authorities to court for refusing to intervene in the latest case involving an eleven-year-old from the Six Nations reserve diagnosed with acute lymphoblastic leukemia. The bone marrow cancer has a 90–95 percent chance of being cured, said the hospital's oncologists.

The hospital was forced into the rare legal move after the Brant Family and Children's Services refused to intervene in the case, reported the October 8 *Globe and Mail* newspaper. The hospital petitioned the agency to seize the girl—whose name is protected by a publication ban—and resume therapy after efforts to convince the family failed. Originally, the girl's family agreed to chemotherapy, but halfway through the month-long treatment they halted the effort in order to pursue "holistic healing that respects the family's ancestral practices" in a private Florida clinic, reported the paper. Treatments at the Hippocrates Health Institute include colon hydrotherapy, acupuncture, hyperbaric oxygen therapy, "aqua chi ionic footbath," and "living food" therapies.

In an interview with the Canadian Broadcasting Corporation (CBC) the girl's mother said: "Before I took her off chemo, I made sure that I had a comprehensive health-care plan that I was very confident that was going to achieve ridding cancer of her body before I left the hospital. This is not something I think may work, this is something I know will work."

The hospital's unusual decision to directly intervene comes on the heels of the case of eleven-year-old Makayla Sault who was also struck by acute lymphoblastic leukemia. The girl and her family, members of the Mississaugas of New Credit First Nations, decided in May to cease chemotherapy and use unproven alternative medicine treatments at the Hippocrates Healing Centre. Makayla was given an 80–85 percent chance of recovery with chemotherapy. Without proper treatment, she will die, doctors told the *Hamilton Spectator*, which is covering the cases. "At the end of the day, why should this child die?" said Dr. Peter Fitzgerald, the president of McMaster University Children's Hospital.

Despite these warnings, the girl was taken off the treatment after voicing her views in a YouTube video in which she said, "I have asked my mom and dad to take me off the treatment because I don't want to go this way anymore." She adds, "If I live or if I die, I'm not afraid."

In the Sault case, the hospital petitioned the Brant Family and Children's Services, which investigated and decided not to act. "We're going to close our file," said executive director Andrew Koster. "We feel that Makayla is in a loving, caring home and that they are carrying on with medicine that would be very appropriate for a First Nations family."

In that case, the hospital dropped the matter, but in the latest situation, Dr. Fitzgerald told the *Globe and Mail* the overriding concern is "saving the girl's life." The cases revolve, in part, around the girls' right to informed medical consent. But the more contentious issue has been the right of First Nations members and their families to choose whatever medical care they want. Some aboriginal experts said the family has a right to pursue traditional healing methods, though it is not clear what treatments offered at the Florida clinic are aboriginal in origin.

Medical experts say there is no evidence that these methods will cure leukemia. In fact, without chemotherapy (which cures about 90 percent of children with this disease), the chance of survival is zero.

In the latest case, hospital officials have told the court they have no evidence of any child with leukemia ever being saved by "traditional medicine."

"This child has a life-threatening illness [and] without standard treatment will not survive, so our sole focus is trying to bring this child into treatment so we have an opportunity to provide her with a long, healthy life," Dr. Peter Fitzgerald told the CBC. The case continues before Judge Gethin Edward of the Ontario Court of Justice.

Paul Benedetti is an award-winning writer with a special interest in health fraud and alternative medicine. He is the coauthor of *Spin Doctors: The Chiropractic Industry Under Investigation* (Dundurn Press). He is on faculty at the University of Western Ontario, where he teaches in the masters of arts in journalism program.

QUOTE WORTHY

Fear and Bad Science

"The court is fully aware of the misconceptions, misinformation, bad science, and bad information being spread from shore to shore in our country with respect to Ebola. . . . The court is fully aware that people are acting out of fear and that this fear is not entirely rational."

—Chief District Judge Charles C. LaVerdiere, in Maine, October 31, 2014, ordering that nurse Kaci Hickox, with no Ebola symptoms, could not be forcibly quarantined as demanded by Maine's governor.

‘Ghost’ Caught on New Mexico Police Video—Again

Benjamin Radford

A mysterious object caught on camera outside a New Mexico police department in September 2014 had many people wondering if it might be a ghost. According to a September 26 report on *Good Morning America*, “Police in Espanola, New Mexico, are trying to figure out what human-shaped, blurry, translucent figure was captured on camera strolling across a locked area of their station Saturday night. The video shows the figure walking through a chain link fence and slowly walking out again.”

Because of my background as an investigator—and the fact that I live in New Mexico—I was asked to research this supposedly spectral visitor. Though the police seemed baffled, after about an hour of research I determined that there would be about three inches in diameter. Because the object is out of focus, its edges and exact dimensions can’t be measured, but it’s clearly a very small “ghost.” Despite the claim that the object is “human shaped,” it is in fact indistinct but small and oval. The fact that the object is out of focus is also revealing; the police surveillance camera is set up to record objects in the yard, not on its lens. Anything on the lens would appear out of focus and translucent, exactly like the ghost in the video.

All evidence suggests that Officer Romero’s first guess about the object’s identity was the correct one: it is actually a bug or insect on the camera, not a human ghost in the yard.

Because the outside lot is a secured area, it would be impossible for anyone to open the gate without an alarm going off, and in any event the object appears to move through objects in classic ghostly style. Police Officer Karl Romero said that at first he assumed that the moving figure in the video was an insect, probably a fly or moth. But when he looked again he saw something that made him change his mind: “Then, I saw the legs . . . and it was a human,” he concluded. Yet it could not be a real human because it appeared to move effortlessly through a high chain link fence. So it was “not a real human,” he concluded: “No—a ghost.” He reported the strange sighting to his superiors, who apparently were equally puzzled (“officers cannot explain what it is,” and “detectives say the video defies logic,” according to *Good Morning America*). The fact that the video was captured at a police station gave it instant credibility, and the video soon went viral with thousands of people viewing and commenting on the mystery.

I began a video analysis, noting that the ghostly blur doesn’t go through the objects in the background (such as the fence) as was claimed but instead goes *over* them—a sign that the “ghost” is close to the camera (such as on the camera lens), not out in the secured police yard. Furthermore, I realized, the object’s scale is all wrong: assuming—as people often report and claim—that a “ghost” is human sized, what appears in the police video is far too small to be human. At one point when it moves over the silhouette of a metal fence post, it appears about the same size—which was enough information contained in the ghost video, news reports, and independent information about it to plausibly identify the mysterious entity.

All evidence suggests that Officer Romero’s first guess about the object’s identity was the correct one: it is actually a bug or insect on the camera, not a human ghost in the yard. Another important clue to solving this mystery can be found in the way the object moves. As Officer Romero noted, the “ghost” does seem to have legs—six or eight of them, not two. The movement of the glowing mystery fuzz is smooth and even, a sign that its weight is being carried and distributed on four or more legs. In contrast, human movement on two legs creates a distinct vertical bounce with each step as our weight shifts from one leg to another moving forward. Based on the “ghost’s” movement alone (and assuming it is a living creature), it’s much more

likely to be an insect than a human.

There's also something important missing from the video that no one seems to have noticed suggesting its earthy origins: a shadow. The supposedly human-shaped ghost, which is relatively small but appears large and solid enough to be seen at a distance on a surveillance camera, does not cast a shadow on the ground despite floodlights from above. Shadows of other objects, such as the fence that the ghost is claimed to move through, are clearly visible on the concrete, yet the ghost casts no shadow. An insect on the camera lens, of course, would not cast a shadow in the parking lot because it's not in the parking lot.

In my research I discovered that, ironically—in the very parking lot where the ghost appeared—insects were (accidentally) captured by a local cameraman in footage broadcast on *Good Morning America* (the video can be viewed at http://abcnews.go.com/US/mexico-police-catch-ghostly-intruder-camera/story?id=25771690; see the bugs in the bottom left-hand corner of the screen around 1:20). When filmed up close, in focus, and in daylight the insect doesn't look strange or mysterious at all, but it's not hard to see why a blurry, unidentifiable entity seen late at night would appear spooky. I reported my results in an article on the DiscoveryNews website, providing the first (and only) in-depth skeptical analysis.

Espanola police are not the first to mistake an insect for a ghost; in fact it's happened before. In 2007 an identical "ghost" was captured on a police surveillance camera not far away in Santa Fe and became known as the Santa Fe Courthouse Ghost. After I conducted extensive onsite investigation and field experiments, I solved the case and revealed it as an insect on the camera lens. For more on that investigation, see "Santa Fe 'Courthouse Ghost' Mystery Solved" in the September/October 2007 Skeptical Inquirer, and chapter 5 of my new book *Mysterious New Mexico: Miracles, Magic, and Monsters in the Land of Enchantment*. As is often the case, all that's needed to raise the specter of a ghost is an ambiguous light along with some imagination and a lack of investigation.

'Psychic' Sally Morgan Scuffles with U.K. Skeptics

Tim Farley

In October 2014 popular British medium Sally Morgan became embroiled in a public dispute. It began when a skeptical activist named Mark Tilbrook appeared outside several of Morgan's shows to distribute educational leaflets to attendees. The handouts—which did not mention Morgan by name or make any specific claims about her show—offered some rhetorical questions about psychic abilities that might lead attendees to consider alternate explanations for what they were seeing in the show. Other skeptics have distributed similar educational materials at psychic shows in the past.

What triggered the controversy was an incident in which Ms. Morgan's personal manager and tour manager (who happened to be her husband, John Morgan, and her son-in-law, Daren Wiltshear) confronted Tilbrook outside an event venue in April 2014. According to Tilbrook's October account in *The Guardian*, they threatened him with both legal action and physical violence. The threats of violence included claiming to know personal details about his life and saying that he was "asking to be knocked out" and that he would be "lifted" or made to "disappear." There followed a letter from Morgan's attorney claiming Tilbrook had libeled Morgan and demanding compensation and legal fees.

Tilbrook reached out to the Good Thinking Society, a skeptical educational nonprofit started by writer Simon Singh. Singh himself successfully defended himself in a libel suit brought by the British Chiropractors in response to his published criticisms. His group is offering Tilbrook legal assistance and also adopted Tilbrook's leafleting campaign and expanded it to include others who claim psychic powers. They are calling it Psychic Awareness Month.

On the Friday after the *Guardian* story, video was released of one such incident, shot from a lapel camera Tilbrook was wearing. It documented that it was indeed John Morgan and Wiltshear making the threats and further showed them making a series of rather shocking homophobic remarks about Tilbrook and other U.K. skeptics. This resulted in a large reaction in the British press. Morgan released a statement within hours that she "does not condone" the behavior in the video and was not aware of it. But her statement also pretty clearly put some blame on Tilbrook himself—causing some to refer to it as a "notpology."

Morgan has sparred with skeptics before. In 2011 she was accused by attendees of one of her shows in Ireland of using an earpiece to receive cues during a show. (Some noted the similarity of these earpiece allegations with James Randi's famous investigation of faith healer Peter Popoff in 1986.) She denied the claims, claiming the earpiece was used to stay in touch with her

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stage manager. Simon Singh and others noted that she stopped using an earpiece in shows shortly thereafter. But when magician Paul Zenon wrote an opinion piece about the incident in the *Daily Mail*, Morgan sued the newspaper for libel. The dispute was settled out of court for £125,000 (about $200,000) with the newspaper apologizing and removing the article.

In another 2014 incident, skeptic blogger Myles Power attended a Morgan show and reported how the medium made a completely incorrect reading, leading to laughter from the audience. This occurred because the audience member had misunderstood the instructions to bring a photo of a dead relative and had instead brought a younger photo of herself. Morgan mistakenly gave a detailed reading about the supposed dead relative, not picking up that the person in the photo was right in front of her!

In the week after the release of the video and Morgan's statement, the video received over 150,000 views on YouTube. Continued discussion of it online and in the press prompted a second public statement from Morgan in which she "sacked" both her husband and son-in-law who will have "nothing more to do with Sally Morgan's business." She ended the statement by claiming that she has "no idea what is going to happen to my marriage." But skeptics reported seeing John alongside Sally at a show venue in Brighton just days later.

Following this the Good Thinking Society released a letter from their lawyer to Morgan's organization demanding a retraction of the allegations about Tilbrook from her initial statement. Tilbrook reported via Twitter that he had received a private letter of apology from the two men. Sally Morgan then announced that she would no longer be signing autographs after any of her shows until further notice. The two web statements from Morgan were removed from her website before the end of October.

Good Thinking Society continued their Psychic Awareness Month throughout October 2014, providing leaflets for skeptics to distribute not only at Morgan's shows but at the shows of other U.K. psychics such as Derek Acorah and Colin Fry. They reported that the staff at the other two psychics' shows "behaved impeccably each time." Mark Tilbrook appeared on several TV programs to talk about the campaign, in one case with Colin Fry. ■

Tim Farley is a skeptical activist and the creator and curator of whatstheharm.net.

QUOTE WORTHY

God Not a Magician

"When we read about creation in Genesis, we run the risk of imagining God was a magician, with a magic wand able to do everything. But that is not so. He created human beings and let them develop according to the internal laws that he gave to each one so they would reach their fulfillment. . . . God is not a demigod or a magician, but the creator who brought everything to life. . . . The Big Bang, which nowadays is posited as the origin of the world, does not contradict the divine act of creating, but rather requires it. The evolution of nature does not contrast with the notion of creation, as evolution presupposes the creation of beings that evolve."

—Pope Francis, October 27, 2014, addressing the plenary assembly of the Pontifical Academy of Sciences at the Vatican to discuss "Evolving Concepts of Nature."

The 16th European Skeptics Congress will be held at Goldsmiths College, University of London, from September 11 to 13, 2015. The Congress is jointly organized by the Association for Skeptical Enquiry (ASKE) and Goldsmith College's Anomalistic Psychology Research Unit (APRU).

Events will include keynote addresses by distinguished speakers, formal presentations, debates, and poster presentations, plus a pre-congress session and Skeptics in the Pub meetings in the evenings. A section of the Congress will cover research at APRU. Visit the Congress website below for up-to-date information concerning the program, registration and accommodations.

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Sylvia Browne's FBI File

Examining Her Alleged Detective Work and a Federal Criminal Investigation

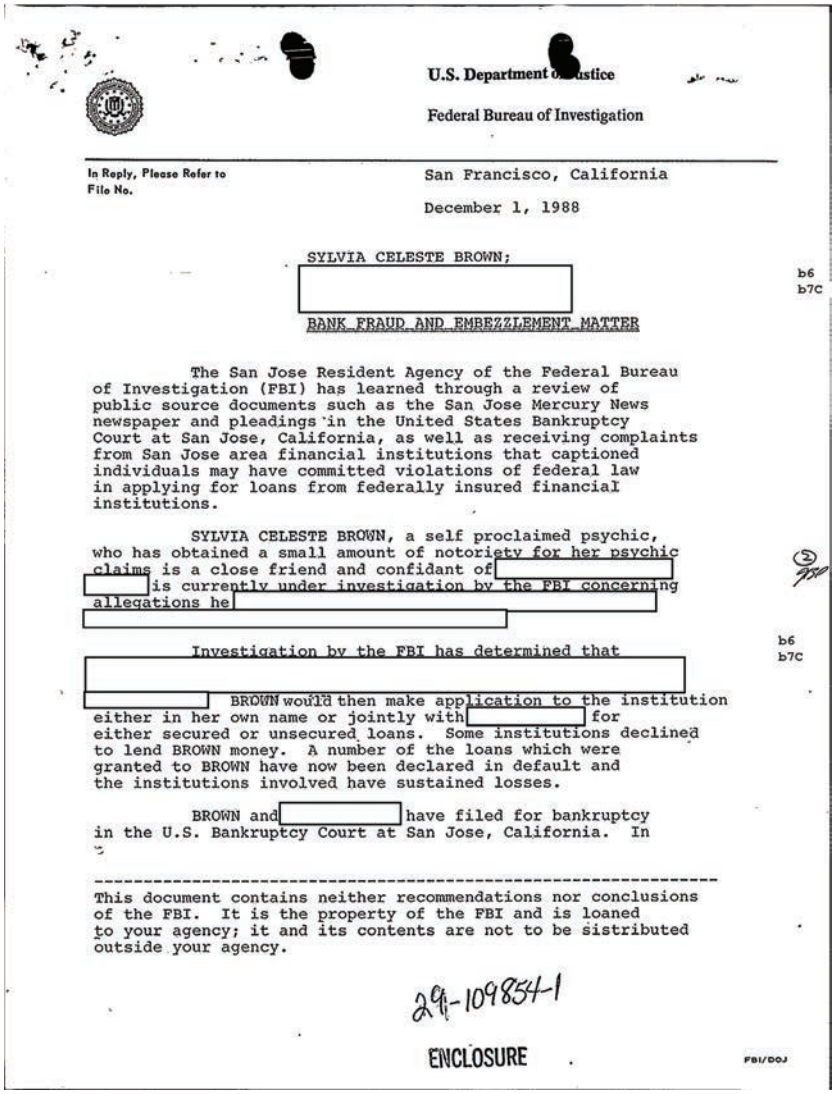
RYAN SHAFFER

During Sylvia Browne's decades-long career offering psychic readings and doing television appearances, she made numerous claims about working with law enforcement to solve crimes. In an age before the Internet, fact-checking by television and newspapers was more labor intensive. It was difficult to find sources to support or deny many of her claims. While several articles in the Skeptical Inquirer have cast doubt on her psychic abilities, Browne defended herself by citing her "work" on cases and giving the media endorsements from seemingly respectable law enforcement members, such as former Federal Bureau of Investigation (FBI) agent Ted Gunderson. Recently obtained FBI files shatter her insinuation that she had a relationship with federal law enforcement and show that the only interest the agency had in Browne was investigating her for fraud.

Records about a person in possession of an investigating government agency, such as the FBI, are available with the person's permission or if they are deceased. In all likelihood, Browne would not have consented to the release of her FBI file given her refusal to allow Robert Lancaster, of StopSylvia.com, to post a transcript online that *her own office* sent him in 2007 (Lancaster 2007a). In her haste to refute claims from an ex-husband about an alleged lack of higher education credits, Browne's office sent Lancaster her St. Teresa's College (now Avila University) transcripts. The transcripts, according to Lancaster, did show Browne's ex-husband was incorrect about how long she attended college. Yet unfortunately for Browne, that transcript also demonstrated that she did not complete college and proved her often-made claim about having a higher education degree was false. Given Browne's reluctance to make records her office sent to a critic publicly available, she probably would not have been willing to allow the release of her law enforcement records. Following her 2013 death, anyone can now obtain the government files concerning Browne.

I filed a Freedom of Information Act request with the FBI asking for documents about Browne, using her date of birth under her previous legal last name of "Brown" and her later addition of "e" to the name. I asked for *all* files as well as "any details about her alleged psychic abilities, help on missing person cases, any investigations or information, and alleged help to Ted Gunderson." Previously John Greenewald's The Black Vault, an online collection of government documents, discussed obtaining Browne's FBI files on a federal investigation and details from the FBI memoranda (Greenewald 2014). Greenewald's website did not make it clear whether it posted all the FBI's files or exactly what was requested from the agency. Therefore, I decided to request all the files about Browne. I also asked for anything about her alleged missing persons work and any information about her and Gunderson. The FBI, after asking for documentation that Browne was deceased, sent me two electronic files on a CD-ROM. The first file totals nineteen pages; the second had thirty-three pages that relate to a criminal investigation. A review of pages shows that Greenewald's release of documents, totaling fifty-two pages, was the FBI's entire Browne collection.

There is no documentation released by the FBI to support the claim that Browne conducted any psychic readings for the FBI, either directly or indirectly.



U.S. Department of Justice

Federal Bureau of Investigation

In Reply, Please Refer to File No.

San Francisco, California

December 1, 1988

SYLVIA CELESTE BROWN;
[redacted]
b6
b7C

BANK FRAUD AND EMBEZZLEMENT MATTER

The San Jose Resident Agency of the Federal Bureau of Investigation (FBI) has learned through a review of public source documents such as the San Jose Mercury News newspaper and pleadings in the United States Bankruptcy Court at San Jose, California, as well as receiving complaints from San Jose area financial institutions that captioned individuals may have committed violations of federal law in applying for loans from federally insured financial institutions.

SYLVIA CELESTE BROWN, a self proclaimed psychic, who has obtained a small amount of notoriety for her psychic claims is a close friend and confidant of [redacted] is currently under investigation by the FBI concerning allegations he [redacted]

Investigation by the FBI has determined that [redacted] BROWN would then make application to the institution either in her own name or jointly with [redacted] for either secured or unsecured loans. Some institutions declined to lend BROWN money. A number of the loans which were granted to BROWN have now been declared in default and the institutions involved have sustained losses.

BROWN and [redacted] have filed for bankruptcy in the U.S. Bankruptcy Court at San Jose, California. In

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29-109854-1

ENCLOSURE

FBI/DOJ

One of the FBI's documents on Sylvia Browne.

Psychic Detective Work

Prior to her death, Browne repeatedly claimed to have worked with law enforcement to solve criminal cases. While there is no doubt Browne commented on criminal cases during her television appearances and directly to family members of the missing and deceased, her work with law enforcement is less frequent and more dubious. For example, in her November 2004 appearance on *The Montel Williams Show*, Browne said: "I remember when I was working on the Bundy case. . . ." Outside of this off-hand comment, there is no evidence to affirm that Browne worked on a "Bundy" case—much less the case of serial killer Ted Bundy, whose capture was not connected to any psychic. Nevertheless, Browne did work with local police on occasion. In 1997, for example, Browne charged the Thibodaux Police Department $400 for a psychic reading on a murder case, but when the murderer was finally caught a decade later Browne's "work" did not contribute to solving or convicting the killer (Shaffer 2013). In 2007, CNN's Anderson Cooper investigated Browne in the aftermath of her false prediction that Shawn Hornbeck was deceased. Cooper told his audience:

> We spoke to Ted Gunderson, who's a retired senior special agent in charge of the FBI in Los Angeles. He's worked with Sylvia Browne, and he says—he says he's worked with her quite a bit. And he said this about her. He says, quote, "I've worked with numerous psychics in the past and very few are really on target, but Sylvia Browne is probably one of the most accurate psychics in the country." (Cooper 2007)

Cooper then asked his guest James Randi about Gunderson's statement, "Now, that's from a former senior FBI official. Are you saying he's wrong?" Randi, who was not aware of Gunderson or the conditions under which he worked with Browne, replied in part, "He has to judge these things much more carefully." Gunderson, who died in 2011, was indeed an FBI agent (Associated Press 2011). Yet he earned most of his public fame during his retirement by promoting numerous conspiracy theories, including "child slave labor for underground alien-controlled facilities" (Gunderson 2007; Lancaster 2007b). However, there is no documentation released by the FBI to support the claim that Browne conducted any psychic readings for the FBI, either directly or indirectly. Moreover,

Gunderson's name appears nowhere in her FBI file, and the topics in the FBI release do not discuss working with the FBI. Thus, there is no evidence from the records that Browne was involved with the agency. Assuming Browne worked with Gunderson, it appears to have occurred after he retired from the FBI and when he was investigating aliens, "Satanic" child abductions, and numerous other conspiracies.

Critics dogged her career, pointing out false predictions and even highlighting her March 8, 1993, no contest plea against the State of California for "selling securities without a permit," which earned her one year probation and an order to pay restitution.

Browne also claimed to have given the FBI testimony in March 1993 about the terrorist attack a month earlier on the World Trade Center (Cooper 2007). Like the previous assertion, there is no FBI record to support this; World Trade Center is never mentioned in the files. To ensure that was the case, I filed another Freedom of Information Act (FOIA) request with the FBI asking specifically "for any documents or video" the agency has about Browne's "interviews with the FBI regarding the 1993 World Trade Center attack." The FBI response was: "We conducted a search of the Central Records System. We were unable to identify main file records responsive to the FOIA." If the FBI did interview Browne about the terrorist attack, there is no record of it in the FBI's central database. If such an interview occurred then, it happened the month she pled to a securities crime in a California court and after the FBI investigated her for federal crimes.

Criminal Charges and Investigations

Browne made a good living by conducting private readings, doing public lectures, and selling books, which earned millions of dollars each year at its peak. Critics dogged her career, pointing out false predictions and even highlighting her March 8, 1993, no contest plea against the State of California for "selling securities without a permit," which earned her one year probation and an order to pay restitution (Romano 1993). What Browne's FBI file lacks in information about her psychic work it makes up for in details about criminal investigations. The newly obtained FBI documents, which describe Browne as "a self proclaimed psychic," show that the FBI closely investigated Browne and her organization, the Nirvana Foundation for Psychic Research, in the 1980s for "violations of federal law in applying for loans from federally insured financial institutions" in the amount of $1,253,933 and caused businesses "sustained losses" (FBI Document 29-109854-1 1988).

The documents show that the FBI examined Browne's agreements with several banks as well as her 1984, 1985, and 1986 tax returns. In particular, the government was interested in Browne and an unknown person using "fraudulent documents, including income tax returns and financial statements to enhance her net worth in making these loan applications" (FBI Document 29A-SF-10056 1989). Browne then used the "loan proceeds to support an extravagant lifestyle." The FBI also had Browne's signatures on the documents examined to confirm it was her handwriting. In May 1991, the FBI, in a highly redacted document, stated: "Investigation in this matter has determined that [redacted] did prepare fraudulent documents, enhancing the financial statements and tax returns of SYLVIA BROWN and [redacted] which documents were then utilized by BROWN in obtaining loans from federally insured institutions" (capitals in original; FBI Document 29-109854-4 1991). Under a heading "bank fraud and embezzlement," the FBI reported that the "Internal Revenue Service . . . also has investigated BROWN, including her tax exempt organization known as the Nirvana Foundation." Ultimately, the U.S. Attorney declined to prosecute the FBI's case due to "insufficient evidence to indicate criminal intent on the part of BROWN" and the FBI stopped investigating.

Most of the remaining FBI files are copies of Browne's loan applications that include financial details and correspondence from Browne about the loans on Nirvana Foundation letterhead. These documents reveal what she claimed was her income before her bestselling books and weekly appearances on *The Montel Williams Show* during the 1990s. One Pacific Valley Bank document Browne signed in 1984 listed her total assets at $3,159,500; another document for California 1st Bank signed by her in 1986 listed $4,215,000. In terms of personal income, Browne signed a notarized document that her individual income tax return in 1983 stated her net income was $93,474 and her individual income tax return in 1982 had her net income at $105,553. One must keep in mind that Browne, as the FBI described her, in the 1980s obtained "a small amount of notoriety from her psychic claims." It was after her 1993 no contest plea that she became an international psychic star.

Sylvia Browne died in November 2013, but her organization continues to live on with adherent supporters. Despite numerous media outlets citing her poor accuracy rate and mentioning that she inaccurately predicted the age at which she would die, her funeral saw mourners who praised Browne. One woman claimed she paid Browne $30 in 1974, who, in turn, described a house she would buy (Kurhie 2013). Even without Browne, the business continues promoting her books and selling memberships for her "Inner Circle." Chris Dufresne, her son, continues offering psychic services and using SylviaBrowne.com to promote his psychic readings by telling supporters to contact the "Sylvia Browne Corporation" for reservations ("Psychic Readings" 2014). When people see that Browne built a support base, earned millions of dollars, and regularly appeared as a psychic on television, the details of her numerous failed predictions and various criminal investigations should encourage skepticism whenever someone else claims to be a psychic or medium. For those who will believe without objective evidence, it won't. Yet, for those who care about details and facts, it will.

References

Associated Press. 2011. Former Memphis FBI chief Gunderson dies. *U-T San Diego* (August 19). Online at http://www.utsandiego.com/news/2011/Aug/19/former-memphis-fbi-chief-gunderson-dies/.

Cooper, Anderson. 2007. Islam divided; psychic reality check; battle under the border. CNN (January 30). Online at http://transcripts.cnn.com/TRANSCRIPTS/0701/30/acd.01.html.

Federal Bureau of Investigation Documents. 1988–1991. "Sylvia Browne Files," Federal Bureau of Investigation.

Greenewald, John. 2014. Sylvia Browne's FBI file highlights bank fraud and embezzlement. OpEdNews.com (April 21). Online at http://www.opednews.com/articles/Sylvia-Browne--s-FBI-File-by-John-Greenewald-Fraud_Fraud_Psychic_Psychic-140421-543.html.

Gunderson, Ted. 2007. Biography. TedGunderson.com. Online at https://web.archive.org/web/20070206113717/http://www.tedgunderson.com/Biography.htm.

Kurhie, Eric. 2013. Psychic Sylvia Browne's funeral: Teary mourners, a lavender casket. *San Jose Mercury News* (November 25). Online at http://www.mercurynews.com/celebrities/ci_24600808/san-jose-celebrity-psychic-sylvia-browne-remembered-rising.

Lancaster, Robert. 2007a. A Sylvia Browne college transcript. StopSlyvia.com. Online at http://www.stopsylvia.com/articles/sylviabrownetranscript.shtml.

———. 2007b. AC360: Sylvia Browne's best evidence? StopSlyvia.com. Online at http://www.stopsylvia.com/articles/ac360_brownesbestevidence.shtml.

"Psychic Readings." 2014. SylviaBrowne.com. Online at http://readings.sylviabrowne.com/.

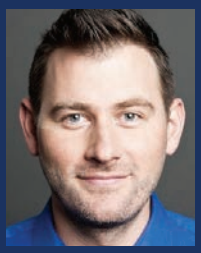
Romano, Bill. 1993. Spiritualist, ex-husband plead no contest in securities case. *San Jose Mercury News* (March 9).

Shaffer, Ryan. 2013. The psychic defective revisited: Years later, Sylvia Browne's accuracy remains dismal. Skeptical Inquirer 37(4) (September/October): 30–34. Online at http://www.csicop.org/si/show/the_psychic_defective_revisited_years_later_sylvia_brownes_accuracy_remains.

Ryan Shaffer is a writer and historian. He has a PhD in history and is currently a postdoctoral fellow at the Institute for Global Studies at Stony Brook University in New York.

POINT OF INQUIRY
WITH JOSH ZEPPS & LINDSAY BEYERSTEIN

For in-depth interviews with the most fascinating minds in science, religion, and politics, join *Point of Inquiry* cohosts Lindsay Beyerstein and Josh Zepps at pointofinquiry.org.



Josh Zepps (cohost) is a new media pioneer; a journalist serving as a founding host and producer at the online talk network HuffPost Live, following hosting stints with such outlets as Bloomberg TV, the Discovery Channel, and as an anchor for CBS's Peabody Award-winning *Channel One News*.

Lindsay Beyerstein (cohost) is an award-winning investigative journalist and staff writer for *In These Times*. Her work has appeared in places such as *The New Republic, Reuters, Slate, Salon, Ms. Magazine*, and *The New York Press*. Wait to see what stories she tells with her guests on *Point of Inquiry*.

Martin Gardner was born one hundred years ago, on October 21, 1914. To commemorate the centennial of the birth of one of the greatest figures in modern scientific skepticism, we are republishing several of his classic Skeptical Inquirer "Notes of a Fringe-Watcher" columns. This column, from our Summer 1993 issue, was his SI tenth anniversary column. It chronicles the start of the False Memory Syndrome. In the late 1980s, a therapeutic fad began to emerge wherein therapists began putting people under hypnosis or into a relaxed, trancelike state, to coax out repressed childhood memories of sexual traumas. In many instances families were torn apart as patients recalled vivid memories of abuse at the hands of parents, grandparents, and other various loved ones. Other patients recalled abuse by day care staff, satanic cults, or even extraterrestrials. Here is Martin's column.

The False Memory Syndrome

MARTIN GARDNER

In March 1992, a group of distinguished psychologists and psychiatrists, including CSICOP's Ray Hyman, banded together to form the False Memory Syndrome (FMS) Foundation. The organization is headquartered in Philadelphia under the direction of educator Pamela Freyd. Its purpose: to combat a fast-growing epidemic of dubious therapy that is ripping thousands of families apart, scarring patients for life, and breaking the hearts of innocent parents and other relatives. It is, in fact, the mental-health crisis of the 1990s.

The tragic story begins with Freud. Early in his career, when he made extensive use of hypnotism, Freud was amazed by the number of mesmerized women who dredged up childhood memories of being raped by their fathers. It was years before he became convinced that most of these women were fantasizing. Other analysts and psychiatrists agreed. For more than half a century the extent of incestuous child abuse was minimized. Not until about 1980 did the pendulum start to swing the other way as more solid evidence of child sexual abuse began to surface. There is now no longer any doubt that such incest is much more prevalent than the older Freud or the general public realized.

Then in the latter 1980s a bizarre therapeutic fad began to emerge in the United States. Hundreds of poorly trained therapists, calling themselves "traumatists," began to practice the very techniques Freud had discarded. All over the land they are putting patients under hypnosis and subtly prodding them into recalling childhood sexual traumas, memories of which presumably have been totally obliterated for decades. Decades Delayed Disclosure, or DDD, it has been called. Eighty percent of the patients who are claimed to experience DDD are women from 25 to 45 years old. Sixty percent of their parents are college graduates, 25 percent with advanced degrees. More than 80 percent of their parents are married to their first spouse.

Here is a typical scenario. A woman in her thirties seeks therapy for symptoms ranging from mild depression, anxiety, headaches, or the inability to lose weight, to more severe symptoms like anorexia. Her therapist, having succumbed to the latest mental-health fad, decides almost at once that the symptoms are caused by repressed memories of childhood abuse. Profoundly shocked by this suggestion, the woman vigorously denies that such a thing could be possible. The stronger her denial, the more the therapist believes she is repressing painful memories.

The patient may be hypnotized, or given sodium amytal, or placed into a relaxed, trancelike state. Convinced that a childhood trauma is at the root of the patient's ills, the therapist repeatedly urges the woman to try to remember the trauma. If she is highly suggestible and eager to please the therapist, she begins to respond to leading questions and to less obvious signs of the therapist's expectations.

After months, or even years, images begin to form in the patient's mind. Shadowy figures threaten her sexually. Under continual urging, these memories grow more vivid. She begins to recognize the molester as her father, or grandfather, or uncle. The more detailed the visions, the more convinced both she and the therapist become that the terrible truth is finally being brought to consciousness. To better-trained psychiatrists, these details indicate just the opposite. Childhood memories are notoriously vague. Recalling minute details is a strong sign of fantasizing.

As the false memories become more convincing, the patient's anger toward a once-loved relative grows. The therapist urges her to vent this rage, to

confront the perpetrator, even to sue for psychic damage. Stunned by their daughter's accusations, the parents vigorously deny everything. Of course they will deny it, says the therapist, perhaps even suppress their own memories of what happened. The family is devastated. A loving daughter has inexplicably been transformed into a bitter enemy. She may join an "incest survivor" group, where her beliefs are reinforced by hearing similar tales. She may wear a sweatshirt saying, "I survived."

No one doubts that childhood sexual assaults occur, but in almost every case the event is never forgotten. Indeed, it festers as a lifelong source of shame and anger. Studies show that among children who witnessed the murder of a parent, not a single one repressed the terrible memory. Not only do victims of child incest not repress such painful memories (to repress a memory means to completely forget the experience without any conscious effort to do so); they try unsuccessfully to forget them. That traumas experienced as a child can be totally forgotten for decades is the great mental-health myth of our time—a myth that is not only devastating innocent families but doing enormous damage to psychiatry.

In the past, when juries found a parent guilty of child incest, there has been corroborating evidence: photos, diaries, letters, testimony by others, a history of sexual misconduct, or even open admission of guilt. Juries today are increasingly more often judging a parent guilty without any confirming evidence other than the therapy-induced memories of the "victim."

Patients as well as their families can be scarred for life. They are led to believe that bringing suppressed memories to light will banish their symptoms. On the contrary, the symptoms usually get worse because of traumatic breaks with loved ones. Moreover, this treatment can also cause a patient to refuse needed therapy from psychiatrists who have not fallen prey to the FMS epidemic. Pamela Freyd has likened the traumatists to surgeons doing brain surgery with a knife and fork. Others see the epidemic as similar in many ways to the great witch-hunts of the past, when disturbed women were made to believe they were in Satan's grip. The Devil has been replaced by the evil parent.

FMS takes many forms other than parental sexual abuse. Thousands of victims are being induced by traumatists to recall childhood participation in satanic cults that murder babies, eat their flesh, and practice even more revolting rituals. Although there is widespread fascination with the occult, and an amusing upsurge in the number of persons who fancy themselves benev-

That traumas experienced as a child can be totally forgotten for decades is the great mental-health myth of our time—a myth that is not only devastating innocent families but doing enormous damage to psychiatry.

olent witches or warlocks, police have yet to uncover any compelling evidence that satanic cults exist. Yet under hypnosis and soporific drugs, memories of witnessing such rituals can become as vivid as memories of sexual abuse.

Thousands of other patients, highly suggestible while half asleep, are now "remembering" how they were abducted, and sometimes sexually abused, by aliens in spaceships from faraway planets. Every year or so victims of this form of FMS (assuming they are not charlatans) will write persuasive books about their adventures with extraterrestrials. The books will be heavily advertised and promoted on talk shows, and millions of dollars will flow into the pockets of the authors and the books' uncaring publishers. Still another popular form of FMS, sparked by the New Age obsession with reincarnation, is the recovering of memories of past lives.

Pop-psychology books touting the myth that memories of childhood molestations can be suppressed for decades are becoming as plentiful as books about reincarnation, satanic cults, and flying saucers. Far and away the worst offender is a best-seller titled *Courage to Heal* (Harper & Row, 1988), by Ellen Bass and Laura Davis. Although neither author has had any training in psychiatry, the book has become a bible for women convinced they are incest survivors. Davis thinks she herself is a survivor, having recalled under therapy being attacked by her grandfather. A survey of several hundred accused parents revealed that in almost every case their daughters had been strongly influenced by *Courage to Heal*.

From the growing literature of FMS cases I cite a few typical horrors. A 28-year-old woman accuses her father of molesting her when she was six months old. "I recall my father put his penis near my face and rubbed it on my face and mouth." There is not the slightest evidence that a child of six months can acquire lasting memories of *any* event.

It is an alarming trend that a dozen states have revised their statute-of-limitations laws and now permit legal action against parents within three years of the time the abuse was *remembered!*

Betsy Petersen, in *Dancing with Daddy* (Bantam, 1991) tells of being convinced by her therapist that she had been raped by her father when she was three. "I don't know if I made it up or not," she told the therapist. "It feels like a story," he replied, "because when something like that happens, everyone acts like it didn't."

In 1986 Patti Barton sued her father for sexually abusing her when she was seven to fifteen months old. She did not remember this until her thirty-second therapy session. She recalls trying to tell her mother what happened by saying, "Ma, ma, ma, ma!" and "Da, da, da, da!"

Geraldo Rivera, in 1991, had three trauma survivors on his "Geraldo" television show. One woman insisted she had murdered 40 children while she was in a satanic cult but had totally forgotten about it until her memories were aroused in therapy. Well-known entertainers have boosted the FMS epidemic by openly discussing their traumas on similar sensational talk shows. Roseanne Barr recently learned for the first time, while in therapy, that she had been repeatedly molested by her parents, starting when she was three months old! Her story made the cover of *People* magazine. Barr's parents and sisters deny it and have threatened legal action. A former Miss America, Marilyn Van Derbur, has been in the news proclaiming her decades-delayed recollection of abuse by her father, now deceased.

It is an alarming trend that a dozen states have revised their statute-of-limitations laws and now permit legal action against parents within three years of the time the abuse was *remembered!* In 1990 the first conviction based on "repressed memory" occurred. George Franklin was given a life sentence for murdering an 8-year-old in 1969 almost entirely on the basis of his daughter's memory, allegedly repressed for 20 years, of having witnessed his murdering her friend. A year later a Pennsylvania man was convicted of murder on the basis of a man's detailed account of what he had seen when he was five, but had totally forgotten for 16 years.

Although therapists usually deny asking leading questions, tapes of their sessions often prove otherwise. If no memories surface they will prod a patient to make up a story. After many repetitions and elaborations of the invented scenario, the patient starts to believe the story is true. One therapist, who claims to have treated 1,500 incest victims, explained her approach. She would say to a patient: "You know, in my experience, a lot of people who are struggling with many of the same problems you are have often had some kind of really painful things happen to them as kids—maybe they were beaten or molested. And I wonder if anything like that ever happened to you?" Another traumatist says: "You sound to

me like the sort of person who must have been sexually abused. Tell me what that bastard did to you."

The FMS epidemic would not be so bad if such therapists were frauds interested only in money, but the sad truth is that they are sincere. So were the doctors who once tried to cure patients by bleeding, and the churchmen who "cured" witches by torture, hanging, and burning.

Better-trained, older psychiatrists do not believe that childhood memories of traumas can be repressed for any length of time, except in rare cases of actual brain damage. Nor is there any evidence that hypnosis improves memory. It may increase certitude, but not accuracy. And there is abundant evidence that totally false memories are easily aroused in the mind of a suggestible patient.

A two-part article by Lawrence Wright, "Remembering Satan" (*New Yorker,* May 17 and 24, 1993), tells the tragic story of Paul Ingram, a respected police officer in Olympia, Washington, who was accused by his two adult daughters of sexually abusing them as children. Ingram's family are devout Pentecostals who believe that Satan can wipe out all memories of such crimes. Ingram remembered nothing, but after five months of intensive questioning, he came to believe himself guilty. Psychologist Richard Ofshe, writing on "Inadvertent Hypnosis During Interrogation" (*International Journal of Clinical and Experimental Hypnosis,* 11:125-155, 1992), tells how he fabricated an imaginary incident of Ingram's sexual abuse of a son and daughter. After repeated suggestions that he try to "see" this happening, Ingram produced a written confession!

Jean Piaget, the Swiss psychologist, tells of his vivid memory of an attempted kidnapping when he was two. The thief had been foiled by Piaget's nurse, who bravely fought off the man. When Piaget was in his teens the nurse confessed that she made up the story to win admiration, even scratching herself to prove there had been a struggle. Piaget had heard the story so often that it seeped into his consciousness as a detailed memory.

Paul McHugh, a psychiatrist at Johns Hopkins University, in "Psychiatric Misadventures" (*American Scholar,* Fall 1992), writes about a woman who under therapy came to believe she had been sexually assaulted by an uncle. She recalled the exact date. Her disbelieving mother discovered that at that time her brother was in military service in Korea. Did this alter the woman's belief? Not much. "I see, Mother," she said. "Yes. Well let me think. If your dates are right, I suppose it must have been Dad."

Although the incest-recall industry is likely to grow in coming years, as it spreads around the world, there are some hopeful signs. Here and there women are beginning to discover how cruelly they have been deceived and are suing therapists for inducing false memories that caused them and their parents great suffering. They are known as "recanters" or "retractors."

Another welcome trend is that distinguished psychologists and psychiatrists are now writing papers about the FMS epidemic. I particularly recommend the book *Confabulations* (Social Issues Research Series, Boca Raton, Fla., 1992) by Eleanor Goldstein, and the following three articles: "Beware the Incest-Survivor Machine," by psychologist Carol Tavris, in the *New York Times Book Review* (January 3, 1993); "The Reality of Repressed Memories," by Elizabeth Loftus (psychologist, University of Washington), scheduled for publication in *American Psychologist,* and "Making Monsters," by Richard Ofshe and Ethan Watters, in *Society* (March 1993). Most of this column is based on material in those articles. Copies can be obtained, along with other literature, from the FMS Foundation, 3401 Market Street, Philadelphia, PA 19104. The phone number is 215-387-1865, Fax: 215-387-1917.

The FMS Foundation is a nonprofit organization whose purpose is to seek reasons for the FMS epidemic, to work for the prevention of new cases, and to aid victims. By the end of 1992, only ten months after its founding, more than two thousand distressed parents had contacted the Foundation for advice on how to cope with sudden attacks by angry daughters who had accused them of horrible crimes.

I trust that no one reading this column will get the impression that either I or members of the FMS Foundation are not fully aware that many women are indeed sexually abused as children and that their abusers should be punished. In its newsletter of January 8, 1993, the Foundation responded to criticism that somehow its efforts are a backlash against feminism. Their reply: Is it not "harmful to feminism to portray women as having minds closed to scientific information and as being satisfied with sloppy, inaccurate statistics? Could it be viewed as a profound insult to women to give them slogans rather than accurate information about how memory works?"

The point is not to deny that hideous sexual abuse of children occurs, but that, when it does, it is not forgotten and only "remembered" decades later under hypnosis. Something is radically amiss when therapist E. Sue Blume, in her book *Secret Survivors*, can maintain: "Incest is easily the greatest underlying reason why women seek therapy. . . . It is my experience that fewer than half of the women who experience this trauma later remember or identify it as abuse. Therefore it is not unreasonable that *more than half of all women* are survivors of childhood sexual trauma."

As Carol Tavris, author of *Mismeasure of Women*, comments in her article cited above: "Not one of these assertions is supported by empirical evidence." ■

[INVESTIGATIVE FILES JOE NICKELL

Joe Nickell, PhD, is CSI's senior research fellow. He has written scholarly texts on folklore, photo analysis, postcard history, artifact authentication, hoaxes, and other topics of relevance to this article.

Monster Catfish: Investigating a Whopper

For its fourth season, the popular television show *Monster Fish*, on the cable channel National Geographic Wild, asked for my opinion of an old photograph depicting a humongous catfish—one estimated to weigh between 500 and 800 pounds. Was the photo authentic? I flew to Chattanooga to give my opinion for a segment of the episode "Giant Catfish" that aired July 5, 2013. Here is a more detailed presentation.

A Fish Tale

There are different versions—folklore at work—regarding the origins of both the giant fish and the old photo. Some say the picture is genuine, while others insist that it is not.

For example, some accounts hold that the fish was caught in the Tennessee River at the Cerro Gordo community in Hardin County, Tennessee, in 1914. Some say it was landed by the late Joe B. Pitts, the proprietor of Harbour-Pitts Company's general store, while others insist it was actually taken by Green Bailey, a local fisherman who caught it on a trotline. Another story holds that the giant fish was captured after it was trapped in shallow water during a dry spell; one local historian thinks the picture may date from the 1940s; and so on (Wilson 2003; Cagle 2010).

Figure 1. Questioned photograph: real or fake?

Photo Analysis

A copy of the original photograph (Figure 1) bears (in the upper right corner) a handwritten notation, "Cerro Gordo, Ta[ken?] by Green Bailey / Apr 6th / 1914" and (in the lower left) the initials "E. F. P.," presumably those of the photographer. That the script is white is consistent with its having been directly penned, probably with india ink, on the photographic negative, a common practice. (See examples in Nickell 2005, 64, 125.)

Immediately one notices that the photo's ratio of width to height is like that of a picture postcard rather than a standard photograph. Common in the period indicated were what are known to deltiologists (postcard collectors) as "real photo" postcards: black-and-white photos that were not printed on a press but were actually developed onto photographic cardstock having a preprinted postcard back.[1] By 1902, Kodak was selling such prepared cards (Nicholson 1994, 178). Real photos were often made by local or itinerant photographers and so were typically one-of-a-kind or limited-edition prints (although some were commercially made and tended to have typeface captions rather than handwritten ones). Real photos were especially common during the "golden age" of picture postcards, 1898–1918 (Nickell 2003, 105–107; Nickell 2005, 41–43, 56; Willoughby 1992, 68–77; Nicholson 1994, 3, 13, 178).

Looking at the photo image itself, it is quite typical of the postcard genre known as "exaggerations" (Range 1980, 62–63)—a genre now recognized in folklore scholarship as a form of American folk expression

representing a "visual twist on the tall tale" (Axelrod and Oster 2000, 184–185). I have a collection of these: examples include a man being attacked by a monster jackrabbit, a workman hauling a single huge bunch of grapes in a wheelbarrow, two great cabbages (or again two titanic oranges) filling a train's flatcar, a tractor pulling one gargantuan potato, and so on and on. (See Figures 2 and 3.)

But fish are perhaps the most common, no doubt because, as one folklorist observes, "Verbal lore concerning fabulous catches represents a whole category of exaggerated narrative, highly formulaic and entertaining in content, with skeptical reaction from the audience an expected part of the performance" (Brady 1996). To this *verbal* lore is added the *pictorial* variety: photos or artworks that often turn into jokelore—funny instances of the one that *didn't* get away.

Now, such photographs are typically made by photomontage techniques. The term *montage* (French for "mounting") loosely describes any means of making one picture from two or more—as by background projection, collage or "cut montage," sandwiching (of negatives), and other techniques (Nickell 2005, 120–127). The figure of the man standing atop the wagon and staring at the giant catfish does have a "different" look than other elements in the photo—it is a bit out of focus, for example—and could seem to indicate photomontaging. It could, that is, if there were not additional evidence pointing to authenticity.

Figure 2. "Real photo" postcard of "exaggeration" genre (made by photo montage technique), 1908. (Author's collection)

Figure 3. Another "real photo" card shows one that did not get away, 1910. (Author's collection)

Genuine Photo…

As I told the star of *Monster Fish*, fish biologist Zeb Hogan, the photograph is actually genuine and unretouched. But that doesn't mean the giant catfish is the real McCoy: the *scene* the genuine photo depicts has been faked!

Joe Brownlow Pitts of Savannah, Tennessee, speaks with authority: "My daddy had a little wagon that looked like a log wagon. He put the fish—which weighed, I recall, about 85 lbs.—on it. Then my Uncle Frank [Elisha Franklin Pitts (1890–1953)], who was good at photography, cut out a cardboard man that was being used in a clothing advertisement and stuck it on the wagon, along with the fish. He took the picture" (qtd. in "Giant Catfish" 2007). Another source (Cagle 2010) explains that "the wagon, perhaps a quarter or less than the size of a standard wagon, was a freight wagon used to move goods in tight quarters, such as the basement of the Harbour-Pitts Company Store and was pulled by workers, not horses."

The cutout figure—known to cameramen of the period as a "photographic statuette" (a photo mounted on a rigid base, such as cardboard or plywood, and cut with an appropriate tool such as a mat knife or jigsaw [Fraprie and Woodbury 1896, 90–96])—was, as mentioned, reportedly made from an advertisement. However, another source (Wilson 2003) cites hearsay evidence that the man in the picture was one Warren McConnell. It is possible that photographer Frank Pitts posed him and took his photograph rather than using an advertising figure.[2] But what is important is that Jay Barker, president of Tennessee's National Catfish Derby, reportedly had "a copy of another photo of the same man and

Figure 4. Re-creation of the process used for the photo in Figure 1. (Photo by Joe Nickell)

"Verbal lore concerning fabulous catches represents a whole category of exaggerated narrative, highly formulaic and entertaining in content, with skeptical reaction from the audience an expected part of the performance."

fish taken from a different angle"—in which "the man is posed exactly the same as he is in the other photo" (Wilson 2003). This would appear to corroborate the use of a "photographic statuette" in staging the scene.

As to the catfish itself, it may well have been caught by Green Bailey "who worked as a gin-man [cotton-gin operator] for Habour-Pitts Company." He reportedly caught it on a trotline (which would not have been strong enough to hold a 500–800 pound fish![3]). Then he "took his catch to the gin where it could be weighed on a cotton scale" (Cagle 2010). Sources say a former bookkeeper for the Pitts store, Rilla Callens, who actually had passed the photo down to her son, agreed Bailey had caught the fish; so did Green Bailey's sister (Wilson 2003).

Re-Creation

The evidence fully explains the picture as I conclude, and so does photo expert Tom Flynn, a CFI photographer and videographer I consulted, who has expertise in special effects. Tom suggests the staged scene was photographed with a view camera, using a wide aperture and slow-speed film. That the background, especially, is out of focus is consistent with a small object being photographed close up. This effect is often seen when miniature objects are photographed with the intention of making them look larger.

It remained to do a recreation, and for that I flew to Chattanooga. A small wagon was found (on eBay, as I recall), Zeb brought a sizeable catfish in a cooler, and the National Geographic Museum shop provided the excellent cutout picture of Zeb, much smaller than life size. As with the original Frank Pitts photo, the fact that one assumes the wagon and figure are of usual size creates an illusion in which the catfish appears to be huge indeed (Figure 4): larger than life—in fact much, much larger. ■

Acknowledgments

In addition to individuals cited in the text, I am grateful to National Geographic's Drew Pulley and Bailey Frankel, and to CFI's Libraries Director Tim Binga and librarian Lisa Nolan, as well as to Tom Flynn, and to Ed Beck, my assistant at the time of this investigation.

Notes

1. Although the image in Figure 1 is halftone-screened, the half-toning extends even over damaged areas, showing that it results from copying at some later time (either by a photocopier that screens or from a printed reproduction of the card).

2. Frank Pitts may not have had the capability of making such a big enlargement.

3. I have some experience with trotlines, having often accompanied my late grandfather, Charlie Turner, as he removed catfish from his.

References

Axelrod, Alan, and Harry Oster. 2000. *The Penguin Dictionary of American Folklore*. New York: Penguin Reference.

Brady, Erika. 1996. Fishing (sport), in Brunvand 1996, 274–275.

Brunvand, Jan Harold, ed. 1996. *American Folklore: An Encyclopedia*. New York: Garland Publishing.

Cagle, David. 2010. Statement and copy of original photo from Hardin County, Tennessee, Historical Society, August; provided by National Geographic Television.

Fraprie, Frank R., and Walter E. Woodbury. 1896. *Photographic Amusements*, 10th ed. Boston: American Photographic Publishing Co., 1931.

Giant Catfish—Some of the World's Biggest Catfish. 2007. Online at http://www.oodora.com/life-stories/funny-finds/giant-catfish.html; accessed August 30, 2013.

Nicholson, Susan Brown. 1994. *The Encyclopedia of Antique Postcards*. Radnor, PA: Wallace-Homestead.

Nickell, Joe. 2003. *Pen, Ink, and Evidence: A Study of Writing and Writing Materials for the Penman, Collector, and Document Detective*. New Castle, Delaware: Oak Knoll Press.

———. 2005. *Camera Clues: A Handbook for Photographic Investigation*. Lexington: University Press of Kentucky.

Range, Thomas E. 1980. *The Book of Postcard Collecting*. New York: Dutton.

Willoughby, Martin. 1992. *A History of Postcards*. Secaucus, N.J.: The Wellfleet Press.

Wilson, Taylor. 2003. Something's fishy in Hardin County. ESPNOutdoors.com

[THINKING ABOUT SCIENCE MASSIMO PIGLIUCCI

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Science and Skepticism, the Big Picture

I have now written seventy-one columns for Skeptical Inquirer exploring the general topic of "thinking about science." This one is going to be the last for now, so it probably represents an excellent occasion to step back and ponder our subject matter in its broad contours.

To begin with, what is the point for a skeptic to consider the nature of science? Although the answer by now should be obvious, at first glance it may seem a given that skeptics would be very familiar with the topic, focusing on deploying scientific methods and findings to fight the good fight against pseudoscience and its pernicious effects on the general public. And yet, we have discovered that basic ideas about science that are often taken for granted within the skeptic community, such as Popper's notion of falsifiability, are no longer viable in philosophy of science and need to be discarded or at the very least seriously brought up to date.

We have also seen that there is no such thing as *the* scientific method and that there are a number of "accounts" (as philosophers often call them) of how science works, ranging from the already mentioned Popperian one to Thomas Kuhn's paradigms and revolutions, to contemporary thinking of science as a type of Bayesian activity. Along the way we have taken a closer look to fundamental concepts and methods of both theoretical and empirical science, including, for instance, what counts as "evidence" for a claim, or what are the characteristics of a good thought experiment.

A rather constant theme in our journey has been that it is very much important that skeptics themselves do not take science for granted, that they do not think of it as a well established and essentially stable type of human epistemic activity. The nature of science has changed since Aristotle began conducting his biological observations on the island of Lesbo, and it keeps changing as we speak, for instance with some theoretical physicists beginning to talk (misguidedly, I think) of a "post-empirical" science.

We have discovered that basic ideas about science that are often taken for granted within the skeptic community, such as Popper's notion of falsifiability, are no longer viable in philosophy of science and need to be discarded or at the very least seriously brought up to date.

Underlying this theme there has been, inevitably, another one: skeptics need to be just as conversant in the basics of philosophy—particularly philosophy of science, epistemology, and logic—as they need to be about the basics of science. If we want to be effective skeptics, i.e., well-informed debunkers of pseudoscience and defenders of critical thinking, we need *both* science literacy and philosophy literacy. We are all familiar with Carl Sagan's famous dictum, "Extraordinary claims require extraordinary evidence" (which is actually based on CSICOP cofounder Marcello Truzzi's nearly identical phrase, "An extraordinary claim requires extraordinary proof"). But we ought not to mindlessly repeat it like a mantra without realizing that it is actually rooted in David Hume's idea that "in our reasonings concerning matter of fact, there are all imaginable degrees of assurance, from the highest certainty to the lowest species of moral evidence. A wise man, therefore, proportions his belief to the evidence," dating back to his *Enquiry Concerning Human Understanding*, published in 1748. Hume was the original skeptic in the modern sense

of the term, and acquaintance with his work clearly shows that science, philosophy, and skepticism have always proceeded hand in hand (in hand).

And yet, it is precisely the (often scornful) rejection of this partnership that we hear trumpeted by a number of skeptics and even prominent scientists. The list is a long one, and there is no point revisiting it (just do a quick Internet search on "science vs. philosophy" and you'll see what I mean). It is worth noting, however, that the wholesale rejection of an entire field of inquiry (in this case, philosophy) by practitioners of a different field who are demonstrably ignorant of the first one amounts to a form of anti-intellectualism—which is ironic, considering that we skeptics consider ours to be very much an intellectual community.

Indeed, the more we reflect on the nature of the skeptic (and humanist and atheist) community, the more it seems like there is great potential to do good, but also quite a bit of confusion and misunderstanding on basic issues. For instance, it is now a well-entrenched habit among skeptics to "name the fallacy" committed by their opponents, whatever that fallacy may be in any particular case. Are you citing the Bible? That's an argument from authority! Are you trying to disqualify me from talking about evolution on the grounds that I'm biased as an atheist? Genetic fallacy! Are you making a positive claim and yet refuse to provide the evidence to back it up? Invalid shift of the burden of proof! And so on and so forth.

One might rejoice in this sort of thing, since it seems to indicate a working knowledge of basic informal logic, which is, after all, a branch of philosophy. The problem is that a little knowledge is often just enough to do more damage than good. In the above cases, notice that philosophers consider informal fallacies actually fallacious only once the background has been clearly taken into account, since there are instances where those not only are not actually fallacies but represent pretty decent heuristics that are wise to deploy in order to navigate the world pragmatically. For instance, we all rely on one authority or the other to back up our claims, because we don't have the time or skills to verify them. It isn't, therefore, a question of authority per se, but of the quality and reliability of such authority. And it is not at all a bad idea to consider the track record of an individual or organization when evaluating their reliability: shouldn't you be at least a bit suspicious of a car being sold to you by a known fraudster? As for the burden of proof, again, the context is everything, since it is a matter of elementary logic to show that any "positive" statement can easily be turned into a negative one (thus shifting the burden of proof?) by the simple addition of a ~ (the logical symbol for "not").

This is not just pedantry; it has practical consequences. You may have noticed that a number of purveyors of pseudoscience have become wise to the fallacy game, now accusing our side of engaging in an argument from authority whenever we say that climate scientists are best positioned to weigh in on the issue of global warming, or medical researchers on whether there is a connection between vaccines and autism. The whole thing is degenerating into a rhetorical battle rather than a confrontation of carefully thought out ideas.

Or take yet another superficial truism that upon closer examination turns out to be anything but. Skepticism, which models itself after science, is supposed to be about facts, not opinions or (wishful) beliefs. But if there is anything we have learned from the philosophy (and sociology) of science over the past few decades it is that there is no such thing as "just the facts." A well-known phenomenon termed the underdetermination of theory by the evidence means that at the least some of the time there will be more than one reasonable explanation for a given set of facts. And "facts," as Darwin famously recognized in a frustrated letter he sent to a friend, are actually not independent of theories either (the so-called "theory-ladeness" of observations), because a random bit of information becomes a fact only once it is looked at within a particular theoretical framework.

Skepticism, which models itself after science, is supposed to be about facts, not opinions or (wishful) beliefs. But if there is anything we have learned from the philosophy (and sociology) of science over the past few decades it is that there is no such thing as "just the facts."

What does that mean for the practicing skeptic? That it would be best to revise our view of knowledge in general (not just scientific knowledge) and think of it not as built on some kind of rock-solid foundation (as in the frequently used metaphor of the "edifice" of knowledge), but rather as an intricate and ever-changing web of beliefs, some more substantiated and secure than others but all open to revision—with the revisable threads of the web including even the very way in which we do science, logic, and math, if need be. Needless to say, this is a concept developed by yet another influential philosopher, W.V.O. Quine, and it is one that we would do well to seriously take on board if we aspire to become what we keep saying we wish to become: not just cynical naysayers, not just pompous and self-assured repositories of the Truth, but rather honest critical thinkers who work hard to make the world a better place for everyone. ■

[PSYCHIC VIBRATIONS ROBERT SHEAFFER

Sheaffer's "Psychic Vibrations" column has appeared in the SKEPTICAL INQUIRER for nearly forty years; its highlights have now been published as a book (Create Space, 2011). Sheaffer blogs at www.BadUFOs.com, and his website is www.debunker.com.

The Trent UFO Photos—'Best' of All Time—Finally Busted?

Once again, farmer Paul Trent's famous UFO photos from McMinnville, Oregon, are a hot topic in UFOlogy. Kevin Randle discussed the photos on his blog *A Different Perspective*, and a torrent of comments from researchers followed. Not just frothy opinion but highly detailed, meticulous comments about the camera angle and position, the weight and size of the hypothetical model, the load on the wires and a possible bend in them, etc. Ultimately this is important, but such matters are unlikely to give us a final answer. There is one thing about this case that everyone can probably agree on: as Randle says, "There are only two conclusions to be drawn about the pictures taken in McMinnville, Oregon. They either show a craft from another world, or they are a hoax. I do not see a third possibility."

Partly in response to this, I wrote a long special report on the current status of the Trent photos on my *BadUFOs* blog. Space does not permit putting it in this column, so I include only the highlights here. You can read the long version, and see all the photos, at http://tinyurl.com/BadUFOsTrent.

On May 11, 1950, farmer Paul Trent of McMinnville, Oregon, snapped two photos of an object that he claimed was a flying saucer (the term *UFO* hadn't been invented yet). There are inconsistencies in Mrs. Trent's accounts of where her husband was when the object was first spotted and who went inside to get the camera. The Trents did not immediately tell anyone about the photos or rush them off to be developed. Instead, the film containing the invaluable flying saucer photos was left in the camera until Mother's Day, so that a few unexposed frames would not be wasted. More general information on the photos is on my website at http://debunker.com/trent.html.

The famous (and to some, infamous) Condon Report included the Trent photos in its section of Photographic Case Studies as Case 46 (http://goo.gl/vaKe81). The principal investigator was William K. Hartmann—who, incidentally, was the first person to come up with the presently accepted theory about the origin of the Earth's moon. This analysis attracted a lot of attention from UFOlogists, particularly because of Hartmann's conclusion that

> This is one of the few UFO reports in which all factors investigated, geometric, psychological, and physical appear to be consistent with the assertion that an extraordinary flying object, silvery, metallic, disk-shaped, tens of meters in diameter, and evidently artificial, flew within sight of two witnesses. It cannot be said that the evidence positively rules out a fabrication, although there are some physical factors such as the accuracy of certain photometric measures of

The first of Oregon farmer Paul Trent's two photos of a supposed "flying saucer," May 11, 1950.

> the original negatives which argue against a fabrication.

Hartmann acknowledges, however, that a fabrication is possible:

> The object appears beneath a pair of wires, as is seen in Plates 23 and 24. We may question, therefore, whether it could have been a model suspended from one of the wires. This possibility is strengthened by the observation that the object appears beneath roughly the same point in the two photos, in spite of their having been taken from two positions.

The sole factor suggesting that the object is distant is a measured anomalous brightness on the underside of the object in Photo 1, compared with the brightness of the shaded underside of the oil tank. The assumption is that, in the case of a model, the two shaded regions ought to have about the same brightness. Since the underside of the object is brighter than the underside of the tank, the assumption is that atmospheric scattering is the cause, and hence the object is at a significant distance from the camera. However, if any of the assumptions are incorrect, the photometry results are meaningless. Among the possible violations of those assumptions:

- The object is translucent, allowing light from the sky to pass through.
- The object has a mirror surface at the bottom, thus we are seeing a reflection of the bright ground and not a shaded surface.
- The underside of an object suspended several feet above the ground from the wires receives much more illumination than that of a tank near the ground, next to a wall. (I would expect this to be true.)

There are very distinct shadows on the garage in both photos, although the Trents claimed that the photos were taken around sunset. The problem is that the wall faces east, and the sun is in that position (about 90 degrees azimuth) at about 8:20 AM PDT. If the photos were actually taken in the morning, then the Trents were lying about the circumstances of the incident. I found that, measuring the shadows, we can greatly restrict the size of the object casting the shadows. In fact, it is so small that it is almost certainly less than one degree. This eliminates every possible source of illumination except the sun.

Trent walked away from where the UFO was supposed to be and instead walked toward where the presumed model was hanging from the wires and crouched down close to the ground to make his "UFO" appear distant.

In 2004, researcher Joel Carpenter (1959–2014) created a website on the McMinnville photos, making a very good case that the object was directly beneath the overhead wires and close to the camera. He suggests that the object was a mirror from an old truck. I have restored Joel Carpenter's original McMinnville photos website (changing only the links), and placed it on the Internet Archive at http://tinyurl.com/CarpenterTrent.

One of Carpenter's findings is that Trent's camera was surprisingly close to the ground when the photos were taken. For some bizarre reason, Trent did not stand up to photograph his UFO, but instead crouched down. Carpenter explains,

> Instead of moving toward the object and shooting the photos from eye level in the unobstructed front yard, he shot the two photos up, from a very low level, from the back yard. For reasons explained above, it seems likely that he actually used the viewfinder on the body of the camera while kneeling. The overall geometry of the positions and the attributes of the camera suggest that he was attempting to frame a nearby object in such a way as to maximize the amount of sky around it and enhance its apparent altitude.

In other words, Trent walked away from where the UFO was supposed to be and instead walked toward where the presumed model was hanging from the wires and crouched down close to the ground to make his "UFO" appear distant.

Since the camera moved a significant distance between Photo 1 and Photo 2, can the two Trent photos possibly be viewed as a stereo pair, to reveal the object's distance? In 2010 an anonymous researcher calling himself Blue Shift did so on *Above Top Secret* (http://goo.gl/OEsXCi). When you cross your eyes to see the image in 3D, the "UFO" is seen to be small and relatively close to the camera compared with the distant hills. Another way of demonstrating the same thing: a montage by David Slater demonstrates that when the two Trent photos are overlaid so that the wires are lined up, the images of the "UFOs" line up as well (http://goo.gl/5JwJ6e). Both these demonstrations show that the "UFO" appears to be fixed with respect to the overhead wires.

In 2013 a group of French skeptics (IPACO) did an in-depth investigation of the McMinnville photos (http://www.ipaco.fr/ReportMcMinnville.pdf). They began with the usual description of the line of sight to the object in each photo, presumed suspension methods, etc. They concluded that the object is a small model.

More interesting is the second part of the report, completed two months after the first part: Evidence of a Suspension Thread (page 29 of the IPACO report). They do not claim to detect the suspension thread directly but instead statistically. They conclude, "For the TRNT1 picture, the presence of a negative peak (thread darker than the sky) was clearly observed which matched exactly to the supposed attachment point, with a significant difference of 2,38 sigma, for a tilt angle equal to -11°. . . . Application of the same method to the second picture TRNT2 provided comparable results, with a tilt angle of -10.29° and results of over 2.5 sigma."

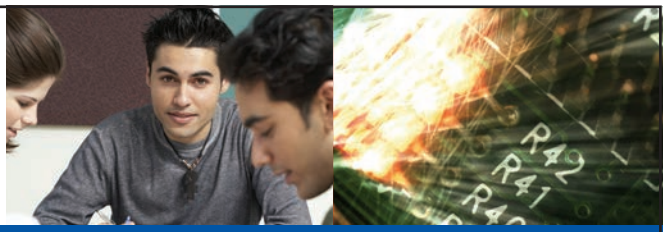
Now, another researcher has weighed in. Jay J. Walter of Phoenix, Arizona, the author of the suspense horror novel *Blood Tree*, did his own investigation. Working from high-resolution scans of first-generation prints that I sent him (scans I have now posted on the Internet Archive for anyone to research at http://archive.org/details/TrentHighResScans), he did his own photo enhancement using the venerable program ArtGem. He said that even using a 4.2ghz quad core 64bit processor with 8 gigs of system RAM, he was still getting "out of memory" errors. However, he persevered and produced a series of photos appearing to detect portions of a suspension thread above the object in both photos. The purported string cannot be seen across its entire length, which is consistent with the French skeptics being able to detect it only statistically. It is significant that Walter and the French team were working with different scans.

Another of Walter's purported discoveries is what he calls a "logo," an apparently flat area with two holes, where it appears a logo plate might be attached or possibly even a handle. Is this real, or is it simply "pareidolia"—seeing a pattern where none exists? Confirmation is needed.

Walter suggests that the object in question is an appliance motor shroud, approximately eight inches in diameter. "I think Trent walked to the garage one evening, tied a string to an appliance motor shroud via an old bolt, tossed the shroud over a wire and tied the other end of the string to an anchor near the ground, then took the two pictures. Logical, practical, and so much less effort for him than other theories. People just do what they do and Trent wasn't going to go to too much effort just to fool his banker buddy."

Do these new findings finally debunk the Trent photos? They would, provided they can be independently confirmed by other researchers, using other high-resolution scans from first-generation prints or the original negatives. Until then, people will continue to argue about such matters as the gauge of the wires and whether the model, if it was a model, would have to be five or six inches in diameter. ■

SCIENCE AND THE PUBLIC



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[NOTES ON A STRANGE WORLD MASSIMO POLIDORO

Massimo Polidoro is an investigator of the paranormal, lecturer, and cofounder and head of CICAP, the Italian skeptics group. His website is at www.massimopolidoro.com.

The Amazing Randi's Most Extraordinary Escape, Part 2

As announced in a previous column, I will be writing James Randi's biography. We will probably be starting a fundraising campaign this spring. If you want to support the project or just receive news and updates you can send me an email here: massimopolidoro1@gmail.com and I will keep you informed. Meanwhile, here is the second part of a sample chapter from the book that I hope you will enjoy.

So, how did The Amazing Randi escape not only from the cell that kept him a prisoner but also from the building of the police station in Valleyfield Quebec, as described in Part 1 of this article? Here is the ingenious solution devised by Randi.

Just two days after the extraordinary escape, Randi wrote to his friend P. Howard Lyons, editor of the Canadian conjuring magazine *Ibidem*, with all the details still fresh in his memory.

In it, Randi even drew a map of the Valleyfield police station that helps to clarify how things were actually accomplished:

The letter "C" indicates the main entrance door, where Randi first entered along with Danny Dean (acting as his assistant) and where the police and the reporters greeted them. The main part of the building is occupied by offices, a recreation room, and a washroom. On the far left a solid, metal door, with a small, barred window on top, led to the jail block that housed only five cells. The cells were empty, as usual—Valleyfield was small enough that its main occupants were petty criminals in for a night's stay or locals who might need to sober up for a few hours before being sent home.

"So, now, you gotta picture this," explains Randi. "You had a big metal door, with a very solid lock on it, that you had to enter in order to get to the block. It used a different key than the one used to open the cell doors inside, I guess, but it didn't matter. What was important was that it opened inward, and you shall soon see why that was very nice for me."[1]

Randi and the chief entered the block, followed by the party of onlookers.

"I got as many people there as I could possibly have. I wanted a lot of people that they had to work around."[2]

Randi wanted to get locked in the cell furthest away from the entrance door to the corridor. This way he could not be seen when they opened the main door to check if he was okay—and in that cell there was also a small barred window with a view to the outside. Precisely—and not incidentally—on the same side where the car was parked.

"Of course, I manipulated things in order to get that specific cell. 'I need some light and ventilation,' I said, so one with a barred window was the best. Now, as with a magic show, the magician runs the show. They don't know what is going to happen. They've never locked a magician up in jail before. They have some ideas about how they're going to do it, but I'm way ahead of them."[3]

Randi took off his clothes, but he was not left in his underwear shorts, as he would later remember it, probably because that's what happened in many other jail escapes he performed. In a surviving clipping from *Le Progrès* of October 14, two pictures show Randi during the performance. In one he is sitting on a wooden chair, his wrists locked in handcuffs that are linked together below the chair with other handcuffs. His ankles are cuffed as well to the chair with leg irons. The article specifies that five cuffs were used: "Two for the feet and three for the hands."[4]

In the photo Randi is wearing a white shirt, socks, and his pants are rolled up below the knees in order to show the leg irons. With his goatee,

heavy eyebrows, and dark hair combed back, he looks fiercely at the cameraman. The tiny cell has only enough space for him sitting and for the bunk nailed to the wall. In the second picture, Randi is still sitting in the cell but now the barred iron door is closed, and Chief Marleau, with his thin moustache and his official cap, looks half-seriously at the reporters while he turns the key and locks the door. On the cell wall, above Randi, is a barred window of approximately two feet square.

Before getting into the cell, then, Randi had removed his shoes, tie, belt, jacket, coat, and hat and put them in the cell at the far end of the corridor.

The cell doors, however, had a very interesting and difficult additional locking mechanism that made it impossible to open them even with the key.

"All of those cells locked at the same time, with a bar on top of the cells that went all the way down the corridor and had little pegs at each cell, and that hooked into the top of the doors. It was a mechanism that could be operated only from outside the cell block. So, even if you had the individual key, you couldn't open it because this little peg was in there."[5]

Randi was handcuffed to the chair, the chief locked the door, and the party of people exited the block through the steel main door. At this moment the outside mechanism locked all of the cell doors with the additional metal bar, and it took about twenty seconds to wind the pegs into place. The Chief then asked if they could close it up and the big solid door was shut. Randi was left inside all alone, and the wait began.

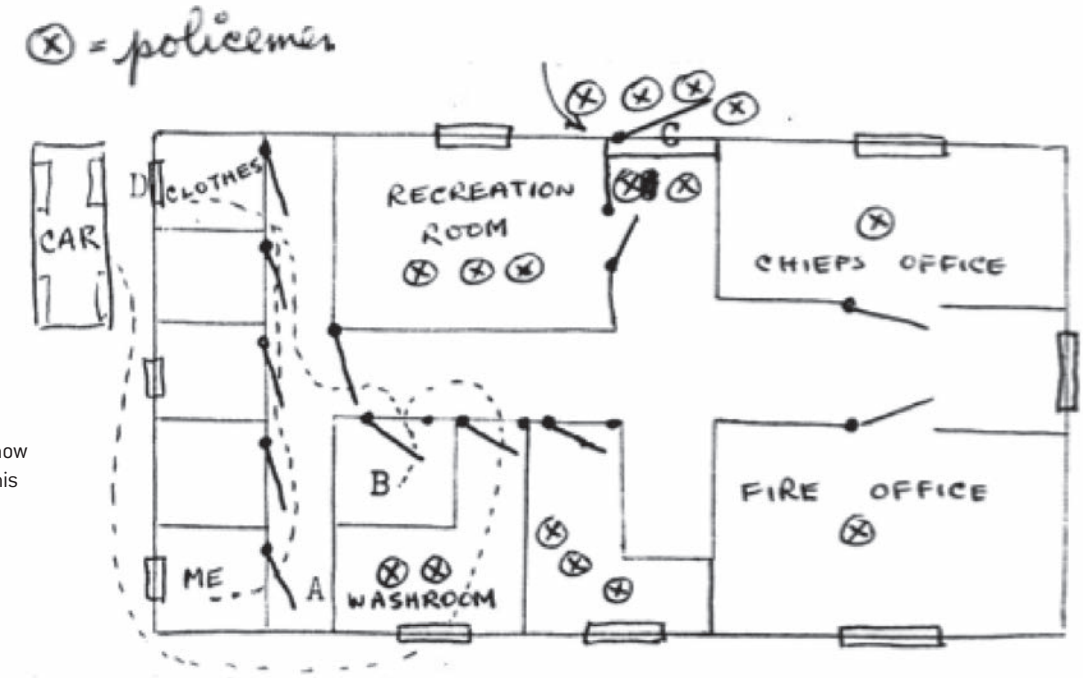
"They are right outside that door, there's no way I'm going to get by them. They're all there, the press is lined up, paper and pens in hand, cameras ready. The chief of police is having a wonderful time: 'What do you think, Chief? Is he gonna be able to do it?' And the Chief replies: 'No one's ever broken out of this jail and no one will,' they are pouring coffee and so on."[6] Meanwhile, Randi was already halfway through his escape.

"It started the exact second that they turned their backs on me. As soon as they started to leave, I worked my way out of the cuffs immediately, no problem there. So they were walking down the corridor and there was a whole gaggle of them, eleven or twelve people. It took them a while to get down the hall and go through the door and finally shout: 'Should we lock the door now?' And I said: 'What?' And they repeated: 'Should we lock it now?' And I pretended I'm hard of hearing because I needed more time."[7]

It took them a couple of minutes to get out, enough for Randi to slip off the

"It started the exact second that they turned their backs on me. As soon as they started to leave, I worked my way out of the cuffs immediately."

—James Randi



In a letter to his friend P. Howard Lyons, Randi drew a map explaining how he accomplished his escape.

handcuffs, get free from the leg irons, and open the door with the duplicate key that he had hidden under the mattress of the bed.

"When I entered the police station I had the duplicate key I made from my impression two years earlier hidden in my shoe. When I undressed in the cell, and after I was searched, I got hold of the key again as I carefully folded and stacked up my clothes."[8]

"Now when they turned the bar at the far end, I had already pushed the door open a bit, which they couldn't see because it was inset from the wall. They couldn't see that it had been swung open so when the bar went to deadlock, the peg was not engaging the door."[9]

When they finally went, Randi could already walk out the cell door, if he wanted, but there was still work to be done: "First I took all the handcuffs and put them in a chain. I attached one to the bar door and the one at the other end to the chair which I left tilted on an angle. This way, the chair was leaning to pull the door shut as soon as they operated the bar at the other end, which they had to do outside before they even opened the other door. Then I went out to get my clothes, because my duplicate key could open all the locks in the block. I got dressed and waited."[10]

The first five minutes were up. From the small barred window on the metal door Chief Marleau made his call: *"Halò, monsieur Randi. Ça va?"*

"Oui, Ça va!"

Randi continued his preparation. First he made a signal from the barred window in cell "D." Gerry, an accomplice who had been hiding in the car until that moment, saw the signal and started to honk the horn. Beep! Beep! Beep!

Randi closed that cell door again and quickly unscrewed all the light bulbs in the block. Finally, he waited in the dark at the opposite end of the cell that had incarcerated him only a few minutes earlier.

Ten minutes had passed. The voice from the opening in the door came again: *"Monsieur Randi. Ça va bien?"*

No answer. The beeping sound from the car outside got more insistent.

"Monsieur Randi? Je suis le chef de police, vous êtes bien?"

Still no answer. The beeping continued.

"They looked outside the barred windows and there I was, sitting in my car beeping the horn with a big smile."

—James Randi

Now everyone was concerned that something had happened. They turned the big wheel that pulled the bar back and a crashing noise was heard coming from the jail. He must have fallen!

It was actually the chair in the cell that had fallen as soon as the catch that kept the bar door open was released from the outside, allowing the door to close and latch.

The big metal door was opened and everybody rushed in, but it was pitch black. The policemen turned their flashlights on, but everybody was moving forward, toward Randi's cell, and nobody could see Randi behind the door.

"The Police Chief ran down to the end and I remember his exact words: 'Oh merde!' They all got down to the far end. Notes! Photographs! 'Chief, stand by the door!' The Chief was discombobulated, the horn was still sounding outside."

Now, how was that accomplished?

"As soon as their backs were turned I just stepped out and started walking down the corridor. I saw some cops down the hall, jumped into cupboard "B" and saw on the glass door that they had walked by. I went out and into the washroom. I exited from the window and reached the car into the parking lot. I switched places with Gerry, who got inside the trunk of the car, and I continued on beep beep beeping."[11]

Thirteen minutes had passed. Randi had vanished from his cell, everybody was very excited, and nobody had a clue about his whereabouts. Danny took advantage of the chaos and locked the window in the washroom, erasing even that last possible hint to how Randi had escaped. The awful noise coming from the outside was now unbearable.

"Will someone stop this racket!" ordered the exasperated Chief of Police.

His men started to head out to comply, when a constable suddenly shouted: "Look outside the window!"

"They looked outside the barred windows and there I was, sitting in my car beeping the horn with a big smile. The Chief came over to the door and he literally took his hat off, and said: 'I have to take my hat off to that! What you did is just impossible!' And of course it was! We did a wonderful week at the theatre, I must say."[12] ■

Notes

1. Interview with Penn Jillette and Kim Scheinberg, March 11, 2005.
2. Ibid.
3. Various interviews with Penn, Ibid, plus: Kim Scheinberg and Angus Johnston, February 28, 2010.
4. "Evasion sensationelle à la station de police de Valleyfield," *Le progres de Valleyfield*, Oct. 14, 1954.
5. Penn et al, ibid.
6. Ibid.
7. Penn et al, plus interview with Massimo Polidoro, June 24, 2014.
8. Polidoro, ibid.
9. Penn et al, ibid.
10. Polidoro, ibid.
11. Angus and Kim interview, plus Polidoro, ibid.
12. When Penn Jillette heard this story for the first time (conversation with Randi of March 11, 2005) his comment was:"That's just beautiful! The really great thinking is the horn honking ahead of time. Because you never think that that's the way you use a confederate. Why would you have an assistant to honk a horn? Well, because it messes up the timing! Just fabulous."

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Diet-Heart: A Hypothesis in Crisis?

Part 1: From Proposal to Paradigm to Policy

In the January 4, 1985, issue of *Science*, Gina Kolata covered the 47th consensus panel report from the National Institutes of Health (NIH), published some three weeks earlier. Since 1961, the American Heart Association had asked Americans to reduce their intake of saturated fats and cholesterol and recommended its "prudent diet" emphasizing fruits, vegetables, and vegetable oils.

The NIH had been hesitant to take a firm position on the diet-heart hypothesis, according to Kolata, because the scientific literature focusing on the connection between dietary cholesterol and saturated fatty acids (SFA) on the one hand, and heart disease on the other, did "not show that *lowering* cholesterol makes a difference" (Kolata 1985).

But the NIH's reticence was finally overcome by the results of a then-new study conducted by the National Heart, Lung and Blood Institute (NHLBI) on the effects of a cholesterol-reducing diet and drug, cholestyramine, on about 4,000 middle-aged men with elevated serum (blood) cholesterol levels (Lipid Research Clinics Program 1984). On average, the intervention group's cholesterol had plunged by 13.4 percent since the investigation began in 1973, or 8.5 percent better than the average decrease found among placebo-treated controls.

According to the NHLBI, its researchers had provided not only "strong evidence" of a "causal role" for low-density lipoprotein cholesterol, or LDL-C, in the pathogenesis of coronary heart disease (CHD), but good reason as well to extend its findings to "other age groups and women" along with "others with more modest elevations of serum cholesterol."

Others were less impressed. In an interview with Kolata, University of Chicago and frequent NIH statistician, Paul Meier, deemed the new study's findings "weak," referring to the disappointing and statistically insignificant distinction between the intervention and control groups in terms of deaths from all causes. And although incidences of angina, bypass surgery, and abnormal exercise electrocardiograms all dropped in the modified diet–drug group, Kolata judged that the new study had "failed, as every other trial did, to prove that lowering blood cholesterol saves lives."

But most controversial was the panel's recommendation that all Americans from the age of two should reduce their consumption of SFA and cholesterol. Also interviewed by Kolata, Thomas Chalmers of the Mt. Sinai Medical School argued that the report "made an unconscionable exaggeration of the data," emphasizing that "there is absolutely no evidence that it's safe for children to be on a cholesterol-lowering diet."

The most regrettable result is unmistakable—the American public is bewildered and incredulous. What kind of diet will help us not only lose weight but remain healthy and safe as well?

In a subsequent letter to *Science*, Daniel Steinberg, who had chaired the NIH consensus development conference, criticized Kolata for devoting the lion's share of her article to "no more than a handful among some 600 conferees" (Steinberg 1985). "The panel's recommendation," he countered, "is sound when *all* of the evidence is taken into account." Such evidence also led quickly in 1985 to the National Cholesterol Education Program, a new NIH administration created to instruct

physicians how to identify and treat "at-risk" patients.

In fact, there was much agreement among the conferees. But dissent in 1984 was both loud and determined, as it remains at the dawn of 2015. The differences between the debates then and now are as multifactorial as heart disease itself. While television continues to manipulate viewer emotions and bombard them with highly varied and always simplistic scientific interpretations and dietary advice, Internet bloggers now flood every recess of the popular consciousness with harsh, often tactically ruthless diatribes against their nutritional adversaries.

Worst of all, Americans wonder whether nutrition science has anything at all of substance to offer them.

Journalists and popular authors publish infuriated and one-sided texts alleging conspiracies between researchers, Big Food corporations, and government agencies to intentionally mislead the public for profits. And while new studies and reviews have lately called the very foundations of the diet-heart hypothesis into question, some leading scientists have entrenched themselves as well, separating into mutually antagonistic nutritional camps.

It might sound too melodramatic to be true. But the most regrettable result is unmistakable—the American public is bewildered and incredulous. What kind of diet will help us not only lose weight but remain healthy and safe as well? Should we cast our lots with the low-fat or low-carbohydrate paradigm? Do saturated fats really raise the risk of heart disease, and, if so, are the officially endorsed replacements perhaps even more dangerous? Worst of all, Americans wonder whether nutrition science has anything at all of substance to offer them.

The classic diet-heart hypothesis (D-Hh) posits simply that diets high in SFA and cholesterol (and low in polyunsaturated fatty acids [PUFA]) raise serum total and LDL cholesterol levels and lead to the accumulation of atheromatous plaques. These plaques gradually narrow coronary arteries, reduce blood flow to the heart, and can eventuate in myocardial infarction.

Early evidence linking heart disease to foods rich in cholesterol (and SFA), including red meat, eggs, and shellfish, derived from animal experiments. In 1913, for example, a Russian pathologist reported the ability to induce atherosclerotic-like lesions in rabbits by feeding them copious amounts of cholesterol (Anitschkow et al. 1913).

Others soon replicated these results, mainly with other herbivorous animals. Many researchers objected, however, that such creatures were naturally ill-suited to metabolize cholesterol. And when similar experiments were carried out on non-herbivorous (and more human-like) dogs, they added, the animals appeared to tolerate the cholesterol much better.

But the D-Hh wasn't formally articulated until University of Minnesota physiologist Ancel Keys presented the concept in 1952 at Mt. Sinai in New York. Also published in a famous paper the following year, Keys employed a simple yet powerful graph correlating in precise curvilinear fashion total fat intake as a percentage of all calories with death rates from heart disease among men in six countries—Japan, Italy, England and Wales, Australia, Canada, and the United States (Keys 1953).

Detractors claimed that Keys intentionally ignored data from twenty-two other countries. And when researchers scrutinized this additional data, they found not only that the correlation was greatly diminished but that no association whatsoever existed between dietary fats and death from all causes (Yerushalmy and Hilleboe 1957). Nevertheless, according to James DiNicolantonio, a cardiovascular researcher at St. Luke's Mid America Heart Institute, Keys's early data "seemingly led us down the wrong 'dietary-road' for decades to follow" (DiNicolantonio 2014).

Nevertheless, the most convincing early evidence for the D-Hh may have originated from Keys's Seven Countries study of sixteen cohorts (12,763 rural males age forty to fifty-nine) in Greece, Italy, the former Yugoslavia, the Netherlands, Finland, the U.S., and Japan. By this time, Keys had refined his initial proposal to impugn primarily SFA and animal products. Indeed, in this, the first multi-country epidemiological undertaking in history, coronary mortality and five-year incidence of CHD was positively correlated only with SFA and not total fat or PUFA intake (Keys 1970).

The cross-cultural results were striking. Upon twenty-five-year follow-up, inter-population death rates from CHD had differed dramatically. In East Finland, for example, 268 per 1,000 lumberjacks and farmers living on diets high in meat and dairy had died. By contrast, of the Greeks of Crete, who in terms of dietary fats subsisted on olive oil and very little meat, only twenty-five per 1,000 had perished. Perhaps most notably, however, SFA accounted for 22 percent of the Finns' yet only 8 percent of the Cretans' total calories.

But Keys was and continues to be criticized for having cherry-picked his Seven Countries data. Some argue that populations in countries like France, Switzerland, Germany, Norway, or Sweden, for example, might have challenged his hypothesis. Some, like journalist Nina Teicholz, go so far as to charge that he deliberately selected "only those nations. . .that seemed likely to confirm it" (Teicholz 2014).

Indeed, Keys's data was not chosen randomly. But Henry Blackburn, his colleague in the Seven Countries study, sees no reason why the populations should have been selected by chance. "Demonstrating a lack of understanding of how scientists approach new questions," he explains, the critics ignore the fact that "any savvy scientist at an early phase of questioning knows to look first not randomly but across wide variations of the cause under consideration, in this case diet" (Blackburn 2014).

Others observed of Keys's results that CHD mortality varied widely *within* certain countries. "Despite similar risk factors and diet," Danish independent researcher Uffe Ravnskov found that "the 5-year incidence of fatal CHD in Crevalcore, Italy, was more than twice that in Montegiorgio, while in Karelia it was five times higher than in West Finland; and on Corfu, 6-7 times higher than on Crete" (Ravnskov 1998). Thus, for these and other dissenters, the supposed correlation between diet and heart disease was little more than a well-staged illusion.

On May 28, 1980—only five years before the NIH's consensus report on the same subject—the Food and Nutrition Board of the National Academy of Sciences issued a far more controversial paper, "Toward Healthful Diets," finding no clear evidence that reducing serum cholesterol through dietary intervention could prevent CHD. Therein, the fifteen-member Board reproved those "who seek to change the national diet" for assuming a nominal risk in widespread dietary adjustment and for relying so heavily on epidemiological rather than experimental evidence.

Critics of the Board accused its members of maintaining inappropriately cozy relationships with Big Food organizations like the American Egg Board. In response to the report itself, Robert Levy, director of the NHLBI, offered the following faint-hearted guidance: "Existing information indicates that Americans should hedge their bets and seek a diet lower in saturated fats and cholesterol, at least until more evidence is available" (Broad 1980).

At that point, only the Academy and the American Medical Association stood in defiance of the U.S. government and at least eighteen distinguished health organizations. America had officially become a low-fat, low-cholesterol nation. ■

References

Anitschkow, N., S. Chalatov, C. Muller, et al. 1913. Uber experimentelle cholesterinsteatose: Ihre bedeutung fur die entehung einiger pathogischer prozessen. *Zentralblatt fur Allgemeine Pathologie und Pathologiche Anatomie* 24: 1–9.

Blackburn, H. 2014. In defense of U research: The Ancel Keys legacy. *The Star Tribune* (July 17). Online at http://www.startribune.com/opinion/commentaries/267581481.html.

Broad, W.J. 1980. Academy says curb on cholesterol not needed. *Science* 208: 1354–55.

DiNicolantonio, J. 2014. The cardiometabolic consequences of replacing saturated fats with carbohydrates or omega-6 polyunsaturated fats: Do the dietary guidelines have it wrong? *Open Heart* 2014; 1:e000032.doi:10.1136/openhrt-2013-000032.

Keys, A. 1953. Atherosclerosis: A problem in newer public health. *Journal of Mt. Sinai Hospital, New York* 20(2): 118–139.

———. 1970. Coronary heart disease in seven countries. *Circulation* 41(Suppl. 1): 1–211.

Kolata, G. 1985. Heart panel's conclusions questioned. *Science* 227: 40–41.

Lipid Research Clinics Program. 1984. The Lipid Research Clinics Coronary Primary Prevention Trial. 1. Reduction in incidence of coronary heart disease. *Journal of the American Medical Association* 251(3): 351–364.

Ravnskov, U. 1998. The questionable role of saturated and polyunsaturated fatty acids in cardiovascular disease. *Journal of Clinical Epidemiology* 51(6): 443–460.

Steinberg, D. 1985. Heart panel's conclusions. *Science* 227: 582.

Teicholz, N. 2014. *The Big Fat Surprise: Why Butter, Meat & Cheese Belong in a Healthy Diet*. New York: Simon & Schuster.

Yerushalmy, J., and H. Hilleboe. 1957. Fat in the diet and mortality from heart disease. A methodological note. *New York State Journal of Medicine* 57: 2343–54.

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[SKEPTICAL INQUIREE BENJAMIN RADFORD

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The Cockington Church Ghost Photo

Q: While on holiday in England in August 2002 my family and I visited some historic buildings reputed to be haunted near the village of Torquay. At one point I photographed my wife and sister in the main doorway of Cockington Church. Later back home my wife looked at the photos and told me she saw a dragon in one image. When she showed it to me I saw, directly to their left at about their height, two ghostly images: one of a bearded man's face and a second one of a horse's head (which she had seen as a dragon). The photograph was taken at approximately three o'clock on a Saturday afternoon. What do you make of it?

—M. Ingleston

A: I've investigated many dozens of ghost photos, and I always enjoy seeing new ones. Not only does each new case provide a chance to hone my analytical skills, but it also gives me additional material for my archives of reference "ghost" photographs. Though ghost photos come in many forms (orbs, haze, double exposure "extras," etc.), in my experience most of them, when thoroughly investigated, can be credibly attributed to one or more of only a handful of science-based explanations. I keep hoping that the next ghostly image I'm asked to examine is both clearer and less explicable than the last; I'd love to find some (apparently) genuine, compelling photographic or video evidence of ghosts.

Ingleston sent me the photo (see Figure 1) and also provided me with a sketch showing where he saw the faces (see Figure 2). I could kind of see the faces that Ingleston was referring to, and they appeared to me as white or yellow forms cast against the side of the building (and not, for example, something floating in the air between the photographer and his relatives—who surely would have noticed them at the time but did not). Before trying to figure out who the ghostly bearded man might be (or what connection, if any, this hypothetical church-going ghost may have with a horse or dragon), it is important to first determine whether those questions need to be answered. As psychologist Ray Hyman points out in the dictum named after him ("Hyman's Categorical Imperative"), before trying to explain a claim, we must make sure that there is something to explain. That is, if the apparent ghostly face is not in fact a ghost's face at all, then we need not spend resources trying to describe or understand the ghost. The investigation should turn to trying to explain or construct a history of the ghost only after it has been credibly determined that a ghost is indeed the most likely explanation for the image (and not something mundane), in order to avoid a wild goose chase.

Figure 1. Photograph taken at England's Cockington Church in 2002, featuring two extra ghostly faces. Photograph by Michael Ingleston, used by permission.

As with all such photographs, my first step in trying to unravel this mystery was to establish, as closely as possible, the circumstances behind this image. Since the photograph was taken twelve years earlier on another continent, traveling to Cockington for the purpose of investigating this image was impractical. I replied to Mr. Ingleston asking for a much more detailed description of the photo's circumstances. I gave him a list of specific questions to answer, as best he could, about what else was going on at the time, based loosely on the journalist basics of who, what, where, why, and how.

While I waited for a response I searched the Internet for additional photographs of the church and its grounds. I was especially interested to see what was directly behind the photographer: for example was it a parking lot, where the sun might have been reflected off a windshield and onto the church wall, creating odd shapes? Finding such images was not as easy as it seems because, like most tourist attractions, the typical point of interest is what's in front of the camera, not behind it (we've all seen photographs of the Sphinx in Egypt or the White House in Washington, D.C., but it's much more difficult to find photos taken from the Sphinx or the White House looking forward). Nonetheless with a bit of persistence I was able to find several photographs that showed a wider shot of the church and specifically what faces visitors when they walk out those church doors.[1]

There was no parking lot with a hy-

pothetically reflective windshield, but the results were interesting and fruitful. One image clearly shows a towering copse of trees directly opposite the church, reaching as high as or higher than the top of the building itself. Indeed, the entire grounds are covered with grass, shrubs, and trees. This provides an important clue to understanding the curious patterns (including the ghostly image) seen in the photograph. The sunlight is clearly coming from behind the photographer, and at a fairly low angle (which corresponds with Ingleston's statement that the photo was taken in mid-to-late afternoon).

The ghostly "faces" are created by shadows of leaves from trees and shrubs behind and to the left of the photographer. In fact the specific branches that likely cast the shadows that created the ghostly faces can be seen in a reference photograph (Figure 3) directly below the characteristic three-paned windows. Further evidence of the tree leaves and branches casting the shadows can be seen in the photograph itself: the reflections of high tree branches can be clearly seen in the windows above the door.

In this case we have at least three different factors working together, any one of which could create the illusion of a ghostly face. The first is the uneven texture of the church's exterior, which is not smooth but instead mottled and rough. Like any other rough surface such as stucco or twree bark, natural, random variations in texture and light can create intriguing patterns. Furthermore the church exterior is stained and weathered from rainwater, moss, and age. This is especially noticeable under the window ledge above the door, the white stains around the doors, and from the waist-high band of discoloration around the base of the church. Either one of these factors alone can—and indeed has on many occasions—create "mysterious" images of everything from Jesus to Mary to ghosts.

On top of that—and even more significantly in this case—we have the interplay of light and shadows caused by sunlight filtered through essentially random patches of trees, branches, and shrubs. In fact, there's yet another random element to this mix, and once again the reflection in the window provides useful information. The sky was neither cloudless nor overcast but had a mix of clouds in the sky. Not only is the sunlight being unevenly cast on the church wall through foliage, but the sunlight reaching that foliage is constantly changing as clouds pass overhead. Thus a bright spot of sunlight on the wall might appear in one photo but not another taken only a few moments later—and this might appear mysterious unless the meteorological conditions are taken into account.

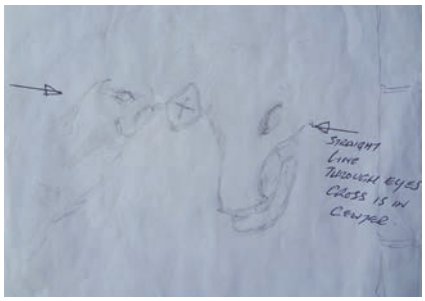

Figure 2. Faces as seen in the Cockington Church ghost photograph, showing a bearded man on the left and a horse or dragon on the right.

Figure 3. A photograph of the Cockington Church grounds showing the area directly in front of the doors where ghostly faces were captured in a photograph.

Seeing Ghostly Faces

The fact that Ingleston, his wife, and others they showed the photograph to found faces in the image is significant. I have encountered many very similar ghost faces in my investigations. People see faces in clouds, ink stains, reflections, tree trunks, even in tortillas and other food. The scientific word for the psychological process is *pareidolia*, and there is even a state quarter that shows this: "The Old Man of the Mountain" in New Hampshire, a group of rocks that looks like a human face.

But why faces, specifically? People almost never report seeing a ghost's elbow, or thigh, or foot. There are very good psychological reasons for why we see faces in things, sometimes even when they do not actually exist. The human brain is hard-wired to recognize faces; in fact, faces are the first things that babies learn to recognize, and parts of the brain are specialized for finding and recognizing faces. And it's not just human faces; virtually all animal faces—from dolphins to cats to horses—have the same effect because faces contain so much information about an animal's state, expressing contentment, fear, pain, and so on. It's no wonder that, evolutionarily speaking, faces are the first things that humans look for: Our ancestors, when meeting a stranger for the first time, didn't look at the other person's feet or elbows or chest to determine if he or she was friend or foe; a smile or a scowl conveys enormous information instantly.

This does not, of course, definitively prove that ghosts don't exist or that the image in Ingleston's photograph cannot possibly be of something unknown or supernatural. However, light patches identical in origin and kind (albeit not in exact shape) can be seen in at least a half-dozen other places around the photograph. If we accept that at least some of the amorphous, random patches are the result of sunlight through trees (as is clearly the case here), there's no logical reason to single one or two of them out as suggestive of supernatural or paranormal origin. The philosophical principle of Occam's razor requires that, all other things being equal, the simplest explanation (or the one invoking the fewest factors) is likely the best one.

In this case it seems that the faces, dragons, and horses were not in the Cockington Church wall but instead in the minds of those who viewed the images. Like with subjective Rorschach blots, we each bring our own interpretation to bear on the world around us. In this case the explanation is psychological, not supernatural. ■

Note

1. Ingleston's photo was taken a dozen years ago, and since several of the reference photographs I found online of Cockington Church were undated, I had to use caution when interpreting the results. Of course over the years areas change: fields can be turned into parking lots, parking lots razed for buildings, and so on. But given the terrain and the historic nature of the grounds, it seemed a safe assumption that the area immediately surrounding the church has remained relatively unchanged over the past decade or so.

In Defense of Useless Math: Why the New Common Core Isn't As Liberating As It Seems

DALE DEBAKCSY

"A re-evaluation of standards is in order."

This was the war cry of an educational system which, having long given up on improvement, decided to settle instead for a dolled-up stagnation: *Let's just try and keep things from getting worse and rewrite the standards so that inertia appears as success.* Internally, that worked quite well—you tinker with the Scholastic Aptitude Test (SAT) to drop the arcane bits, chop six or so time-consuming topics out of AP Chemistry, and get the results that allow the whole shlumping mass to shlump on another year or two.

But then organizations sprung up with the wherewithal to test basic standards internationally, and the results have been a consistently profound embarrassment for American teaching. The 2012 Program for International Student Assessment results have the United States at a solid thirtieth place internationally for mathematics, in a tight race with the Slovak Republic and Lithuania. And, yes, there are validity problems with cross-comparing age groups from radically different cultures, but there is a thrumming alarm deep in those numbers that can't be disregarded lightly.

Politicians sensed gold in them thar hills and made a political issue out of a relatively banal pedagogical one, whipping the country into a fervor that American education is doomed and that the answer lies in accountability systems and a standardization of expectations. No Child Left Behind, Race to the Top, and other governmental programs sought to cajole and punish educators into boosting student performance and instituted an era of standardized test fatigue that is breeding a whole generation of students who loathe learning math on a burning, primal level.

For the last decade, I've been a math teacher in high school and a private tutor serving experimental, religious, boarding, and plain ol' public schools throughout the San Francisco Bay area, and in that time I've been in the trenches with the students as they've watched the educational system radically shift under their feet every two years or so. And they are exhausted—they have long since given up caring about standardized tests, and many of them make it a point of honor to put as little effort into studying for them as possible, the only form of defiance allowed to them. They know that they are being taught in order to take tests, and the result has been an almost complete extinguishing of any desire to pursue math or science on a recreational level out of pure curiosity.

Every teacher on the ground knows this is the hungry viper at the heart of mathematics education—the overbearing handicapping of inspiration and curiosity. But that's a complicated issue to solve, involving how teachers are trained, how classroom environments are created, and how to convince the public out of their fascination with standard-based testing. It's sloppy, and politicians cannot abide sloppiness. So, when the National Governors Association flexed its considerable muscle to enact educational change, those weren't the issues focused on. Instead, the solution to standards exhaustion was to, get ready for it . . . change the standards a bit!

Enter Common Core, the system of educational guidelines that is being, or will soon be, used to evaluate student K–12 learning in forty-four states.

Now, there are some legitimately great ideas whose time has long since come in this sprawling set of benchmarks. There's a very noble attempt to get kids thinking about the structure of "informal arguments" in order to cultivate a seat-of-the-pants sense of what is likely to be a correct answer or law. Also, the new focus on explaining *how* answers are arrived at beyond "the algorithm says to do it this way" is a wonderfully important thing that I hope the K–8 curriculum succeeds with.

Topic-wise, arcane algebra tricks are

downplayed in order to bring students more in line with how professionals solve problems of, say, equation intersection. And I really like how they make students play with compound expressions. Given say, $f(x) = 20x + 5\,e^x$, it's good to have a visceral sense of which components dominate for which values of x. That's something I wish more of my calculus students had coming into class, which Common Core is seeking to inculcate from an early age.

And yet. There's a cold and calculating spirit drifting through the heart of the Common Core standards that sends a chill through anybody who really and earnestly loves math. What becomes abundantly clear while surfing through the new standards is the titanic shift from "A Sampling of All Types of Math" to "The Math That Will Make You Money." Common Core, and the textbook company that provided substantial funding for its development, dresses this up as "providing depth instead of breadth," but the upshot is that merely *interesting* math has been discreetly thrown off the pier to make room for profitable mathematics.

What you get is a huge focus on stats and modeling now, with everything else made to service those two reigning monarchs. Faced with the eternal student question, "Why are we bothering to learn this?" Common Core has decided to surrender every topic that doesn't lead to, "Because it'll make you rich."

It makes sense—there is a huge demand out there for mathematicians skilled in information analysis to work in the biotechnology industry, and precious little for mathematicians who are super-interested in, say, Galois theory. For most people, then, the change in focus will be for the good, but I can't help but feel quite sad for the few who might have cherished a love of pure math for math's sake, who were well served under a system that let them sample everything equally, and who under the new will experience three years of modeling before they get the chance to strike out on their own, if any will to do so remains.

Is that elitist? Maybe, but it's in investigating those absolutely useless nooks and crannies of math that we math teachers tend to get the most excited, and I think an excited teacher trumps just about anything else in terms of getting students engaged with the material. More pragmatically, if the goal is to lure inspiring teachers into the public school system, the way to do that is most definitely not by shackling them to an economics-word-problem-heavy curriculum and turning class time into a series of lectures on calculator use.

Common Core has taken the most intellectually exciting branch of human knowledge, mathematics, and turned it into a series of trade skills. If the great challenge is getting kids excited enough about a subject to learn about it independently of their classroom assignments, then Common Core doesn't contribute much.

This practical subservience shows up everywhere, sometimes with baffling results. In the classic matrix-vector tug of war, the share of matrices is expanded because those are good at dealing with large systems of equations used in modeling, while vectors are pared down to the basics in spite of their importance for students taking physics or eventually multi-variable calculus. Worse still, geometry is now a closet of horrors constructed from shards of under-scrutinized good intentions.

The first standards in the new geometry curriculum are overwhelmingly devoted to transformational geometry, or how rotations, reflections, and translations move objects around the plane. That makes perfect sense if your idea of geometry is its money-making potential, since so much graphical manipulation is run off transformational mathematics and its supporting matrix operations. It's also a wonderful and productive approach in undergraduate courses for understanding the unities of geometry on a deeper level. But for a high school class, to define two figures as congruent if "a series of rigid motions exists which carries one object onto the other" smacks of pedagogic hubris.

Does American mathematical teaching need a rethink? Absolutely—but once again, the educational-political complex has placed all of its faith in curriculum tweaking to fundamentally change the academic landscape, while persistently ignoring larger issues that make for less stirring talking points. Common Core has taken the most intellectually exciting branch of human knowledge, mathematics, and turned it into a series of trade skills. If the great challenge is getting kids excited enough about a subject to learn about it independently of their classroom assignments, then Common Core doesn't contribute much. There are some very clever and positive additions to the standard curriculum, but I don't see any of it leading to a larger curiosity about the beautiful uselessness of mathematics at its best and most subtle. We shall have analysts aplenty and dreamers few, a rather dismal future in which teachers are there to show you how your calculator works and knowledge is something that gets you through the next benchmark test. All hail Common Core. ■

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WHY DO PEOPLE BELIEVE IN GODS?

AND GHOSTS, ANGELS, DEMONS, FAIRIES, GOBLINS, AND OTHER IMAGINED CONSPIRACIES?

Rationalists have found the ubiquity and persistence of belief in the supernatural hard to satisfactorily explain. Recent psychological research uncovering a universal, innate, adaptive tendency toward purpose-based intuitions in explaining the world may have largely resolved the question.

GARY M. BAKKER

Much of the literature and discussion among the skeptical, agnostic, humanist, and rationalist communities is concerned with what people believe, the evidence supporting or refuting these beliefs, and the consequences of these positions. This is a perennial endeavor, and it will continue as long as variety and change occur in people's beliefs.

However, an issue addressed almost as much—*why* so many people believe "weird" or unsubstantiated things—presents a different sort of question. It has an empirical, scientific, psychological answer that, when substantially formulated, should require no more than occasional tinkering or elaboration as research and knowledge on human cognitive function gradually progresses.

Numerous surveys have shown us that the most widespread, persistent category of such beliefs is in supernatural beings—in gods, ghosts, and suchlike. A sufficient explanation for this phenomenon is critical for several reasons. It is necessary to counter the "So many believe, therefore there must be something in it" argument. It can guide us strategically in our quest to enable more people to hold beliefs that are evidence-based and are therefore more likely to correspond to the realities that the Enlightenment and the scientific process have revealed to us.

Many explanations for other weird beliefs, usually in the form of cognitive errors, have been formulated. But continuing speculation over why intelligent, educated, stable, happy people are drawn in overwhelming majorities in most countries to unsubstantiated, arbitrary, paradigm-shattering beliefs in supernatural agents indicates that a further form of powerful, almost universal, cognitive error remains to be identified.

Fortunately, recent psychological research uncovering a universal human tendency toward "promiscuous teleological intuitions"—strong purpose-based intuitions (Kelemen et al. 2012)—has brought us to the point of a substantial explanation for widespread belief in supernatural agents despite a paucity of evidence for them, such that we may now be able to move on from speculation about multiple casual factors and intuitive suggestions about subsequent tentative responses to assertive policy development and coordinated social action.

Scientific and Philosophical Arguments Rarely Work

Some will argue that the answer to the question "Why do people believe in gods?" is a straightforward one. "It's due to the evidence," they say. This answer is adequate for questions such as "Why do people believe in the Sun?" or "Why do people believe the Sun is powered by a fusion process?" because the relevant evidence has been assembled and a consensus of opinion/belief has formed. But it cannot explain the ubiquitous belief in gods across almost every culture on Earth because no consensus has developed supporting belief in any of them even after several thousand years of research and debate.

This is starkly illustrated by the existence of a substantial, intelligent, educated atheist/agnostic community, and by the hundreds of mutually contradictory opinions about the gods believed in (i.e., religions). The evidence for any supernatural beings is clearly inadequate to explain the widespread and profound belief in so many particular ones. Scientific and philosophical argument has, it seems, convinced no one and changed very few minds on the matter.

Why People Believe Other Weird Things

Similar questions are asked about people believing in other evidence-sparse phenomena such as alternative medicine, diagnostic auras, flying saucers, Yeti, and so on.

A common denominator among these examples is a lack of understanding of what constitutes real evidence. In theory at least, if a believer were to be presented with sufficient evidence one way or the other and had been educated to understand what counts as real evidence and why, then they could be persuaded not to bother with, let alone rely on, their homeopathic cancer cure or the latest pyramid scheme. Most explanations for the above beliefs involve cognitive errors such as confirmation bias, pareidolia, frequency illusion, illusory correlation, availability heuristic, bandwagon effect, and so on. The scientific method was largely developed to help us counter these universal human tendencies toward making errors in our thinking.

However, as has been described, when it comes to religious beliefs, scientific and philosophical arguments rarely work. People do not stumble into a misguided belief in a god through deductive error. They seek out, assume, or create *de novo* for themselves such a belief. It seems to be *Homo sapiens*' default position.

The most similar nontheistic widespread beliefs would be in the many conspiracy theories attracting the interest of up to half of our population (Oliver and Wood 2012). These also involve an attraction to evidence-sparse assumptions about powerful purposeful agents behind what the rest of us assume is more likely to be the naive, messy behaviors of very ordinary people.

There Must Be a Cognitive Urge or Instinct

So it is not enough to propose to a god-believer or a goblin-believer, "You don't have enough evidence, so you are probably wrong." They "just know" they are right; there is no clinching evidence against their beliefs, and most other people share a similar intuition. These features, they feel, place the onus on the skeptic (no matter how unfair to William of Occam this may seem) to explain how the intuitions of so many intelligent people can be so consistently wrong in roughly the same direction.

If logic and evidence do not explain the near-universal belief in some higher power, then it must be in the nature of human beings to *want* to believe in it. There must be some drive or urge or innate cognitive tendency toward such belief. Almost every culture ever studied has included a—often dominant—metaphysical element despite a lack of any substantial evidence. Hence, the question "Why do people believe in gods?" is a psychological one about drives, instincts, or cognitive tendencies, which can therefore be answered psychologically and scientifically.

Past Psychological Explanations

Several explanations for this psychological phenomenon have been proposed over the years. But the question still arises and is addressed in books, articles, and at every skeptical conference I have attended. Clearly, the explanations tendered to date have not been comprehensive, explanatory, satisfying, or instructive enough for a working consensus to form on this issue, allowing us to thus move on using what we now better understand.

Listed below are a few of the many interesting, perhaps useful—but incomplete—explanations for ubiquitous god-belief that have been hypothesized in the past.

The Fear of Death

The price of consciousness is an awareness of one's own inevitable death. The emotion of fear has motivated the behavioral avoidance of death in all higher organisms. In humans, therefore, this fear is instinctive, and people have a massive incentive to self-delude and to assume (despite a dearth of evidence) that an afterlife awaits. This carries the bonus of promising a reunion with deceased loved ones.

However, this explanation for ubiquitous beliefs in gods, angels, leprechauns, and suchlike is not sufficient. It does not explain hundreds of common extraneous features beyond the promise of an afterlife that are found in religions around the world, such as notions of angels and demons, sin and ritual, hell and sacrifice, goblins and ghouls, prayers for help, and rules to live by in this life. It only explains why many people choose to assume some form of consciousness after death. A creator god or a judgment day god or an interactive benevolent god is not necessary for this.

Further, religious people still seem to fear and mourn death just as much as atheists do. As a sop to this fear, the afterlife assumption does not really work very well, except perhaps to motivate suicide bombers. So the fear of death explains only a tiny fraction of people's supernatural beliefs.

Desire to Control People

Friedrich Nietzsche, though an atheist, approved of religion as a means for the elite minority of humanity (the "supermen") to control the gullible unimportant majority. Religions have clearly been used in this way throughout history, both as a means of internal state social control and as rhetoric to justify and excuse wars actually instigated by motives of power, wealth, or land acquisition.

But ruling elites would be unlikely to successfully delude the masses, and maintain the delusion for centuries, with a narrative that did not come naturally to the people. The people must, at root, *want* to see the emperor's new clothes. The desire to control can explain the construction of religions but not their eager adoption. For example, Socrates proposed that the strata of society be justified by disseminating to its ordinary citizens the "myth of the metals" in which it is contended that we are all born with gold, silver, bronze, or iron mixed in our souls. Only the first of these can make us fit to rule.

This "noble lie" did not take off anywhere near as well as the tale that some of us are God's chosen and some are unworthy infidels. The "divine right"of kings to rule grew from this—more popular—noble lie. What is the critical difference between these alternate narratives, explaining their contrasting popularities? Could it be that bronze in your soul is only a *cause* of your mediocrity, whereas God's allocation is done to a *purpose*? I will revisit this critical difference.

Direct Religious Experience

Some people have chosen to interpret their mystical experiences, drug-induced hallucinations, hyperventilation symptoms, psychotic episodes, hypoglycemic effects, near-death experiences, or dreams as direct evidence of a spiritual world and of a god. However, this path to faith is a minority route. It does not explain god-belief's ubiquity. Many more people believe in God than have seen him.

Nor is it an inevitable deduction from such phenomena. Neurological and psychological explanations have been developed for all these experiences. We must still explain why so many people prefer to blunt Occam's razor by assuming that elaborate fantastical supernatural events are occurring—rather than concerning but ultimately mundane ones.

An Evolutionary Advantage

Several theorists, such as psychologist Jesse Bering (2012) in *The Belief Instinct*, have claimed that a tendency to believe in a higher being that oversees and punishes us has the evolutionary advantage of making people more cooperative, conformist, patient, and restrained and that societies with such individuals and with a religious culture will more likely thrive or at least survive.

However, this hypothesis has been hotly debated. It better describes the processes of cultural natural selection and evolution among the memes of competing societies than the processes of biological natural selection among the genes of competing individuals. There are clearer examples of cooperative societies flourishing than of submissive individuals

procreating profusely. Genghis Khan is a stark illustration of a highly nonconformist, uncooperative, impatient, and unrestrained individual whose multitudinous progeny subsequently dominated an entire gene pool.

Furthermore, we are not trying to understand a ubiquitous belief in a certain god (a meme). We are trying to understand a cognitive trait, skill, or tendency (influenced by a gene). Having been uncertain to date what this tendency is, we cannot assume it is overall desirable and evolutionarily advantageous. Is it gullibility, religiosity, suggestibility, conscientiousness or "conscientiousness," superstitiousness, or submissiveness? Which of these confer survival advantage for the individual and why? The evolutionary advantage hypothesis for god-belief is as yet incomplete.

The Brain's "God Spot"

A related line of explanation has arisen since the proliferation of fairly precise functional brain-scan studies using fMRI, SPECT, PET, and other technologies. Claims have been made (e.g., d'Mayberry 2014) that when people are experiencing "transcendence"—meditating or praying—that certain regions of the average brain (people's brain maps do vary) light up.

This very promising technology has unfortunately been taken, especially in the mass media, as a new source of explanation for a raft of familiar mental phenomena. For example, when alcoholics have a drink, certain brain regions react. The public and even some scientists have concluded from these findings that problems such as alcoholism, obsessive-compulsive disorder, or depression are somehow more "real" now that we have found a neurological site or correlate.

The logic here is bizarre. Has any scientist ever asserted, or even imagined, that there is no neurological substrate or correlate to *all* mental activity? And the fact that brain bit X fires up explains nothing. Nor does it, yet, tell us what to do about any of these problems beyond what we have discovered to be useful at a psychological level fifty years ago (Satel and Lilienfeld 2013).

So if there is a God spot, *why* is there a God spot and what exactly does it do?

A Need for Meaning

The meaning of a person's life is a cognitive concept. It only exists if viewed or held by a conscious entity, just as purpose only exists if there is a "purposer."

The meaning or purpose in an individual's life can be derived internally or externally. Common internally derived sources of purpose (developed or appreciated by the person him- or herself) include achievement, procreation, "happiness," or contribution to mankind or to fellow travelers.

But this source appears to be insufficient for many people. Externally imposed purposes abound, such as God's grand plan, avoiding Hell, pleasing God, fear of God, seeking sainthood, etc. These are relatively simplistic and immature motivations for doing good or striving hard, just as they provide simplistic, stifling, and immature explanations for natural phenomena. A child may be satisfied when asking "Why should I behave?" to be told "Because I say so" or "Because it's good" or "Because God says so." But an adult may need a more sophisticated explanation in terms of effect on others or on society's cohesive functioning. In the same way a reference to Thor when explaining lightning is a simplistic and stifling response. It stunts further inquiry but has satisfied a surprising number of otherwise intelligent people throughout history.

So the apparent human desire for meaning or purpose does in part explain the almost universal phenomenon of god-belief. But the question remains: Why are so many people focused upon externally derived over internally derived purpose? Similarly, humans clearly thirst for knowledge and explanation. But why do so many leap to "because God made it so" explanations for natural phenomena? As Tim Minchin asked in his beat poem and short film *Storm*:

> Isn't this enough?
> Just this world?
> Just this beautiful, complex,
> Wonderful unfathomable
> Natural world?
> How does it so fail to hold our attention
> That we have to diminish it with the invention
> Of cheap man-made myths and monsters?

Promiscuous Teleological Intuition

The work of psychologist Deborah Kelemen and her research colleagues may enable us to now fill the explanatory gaps I have described. Drawing on her own and others' research programs, Kelemen, director of the Child Cognition Laboratory at Boston University, has found that children around the world "evidence a general bias to treat objects and behaviors as existing for a purpose" (Kelemen 2004, 295). There is now overwhelming evidence that children are innately prone to "promiscuous teleological intuitions," preferring teleological, purpose-based rather than physical-causal explanations of living and nonliving natural objects (Kelemen et al. 2013).

For example, young children do not see raining as merely what a cloud does but as what it is "made for." If asked why prehistoric rocks are pointy, children will greatly prefer "so that animals could scratch on them when they got itchy" over "bits of stuff piled up for a long time."

Early parenting or explaining makes little difference to this strong tendency. It appears to be modifiable only from around ten years of age. For example, the children of both religious fundamentalist and non-fundamentalist parents, when asked why a certain animal exists, favor "God made it" or "a person made it" over "it evolved" or "it appeared." This tendency declines only after eleven years of age and only in the children of non-fundamentalist parents.

Much research supporting and developing this hypothesis has been undertaken. From infancy, humans are excellent "agency detectors," sensitive to others' mental states. Even twelve-month-olds will follow the gaze direction of symbolic faces. Children's complex imaginary companions, like supernatural agents, occur cross-culturally (Taylor 1999).

Kelemen's explanatory hypothesis is that this generalized default view, that entities are intentionally caused by someone for a purpose, is a side effect of a socially intelligent mind that privileges intentional explanations.

It is not difficult to posit the evolutionary advantages of such "attribution of agency" among infants and children. An infant's *entire world* comprises an intentional agent—its parent. The sooner and more thoroughly an infant can develop a "theory of mind" and respond accordingly, the better for it. It must attach. The parent must bond. It must anticipate and manipulate its world on the assumption of purposeful agency occurring all around it. An absence of such is starkly illustrated by the autistic child, to whom its parents are just another set of shapes in its visual field. No attachment occurs, and in less affluent, protected, aware times than we have now, such children rarely survived. They could not control their (almost entirely interpersonal) environment and starved, ate poison, or just wandered away.

The tendency to attribution of agency extends beyond the world of man-made artifacts to the natural world. Children intuitively identify people as the designing agent of artifacts and God as the designing agent of nature (Kelemen 2004, 299). "All known folk religions involve nonnatural agents and intentional causation—the substrate of intuitive theism" (Kelemen 2004, 297).

Religious belief is cognitively natural and culturally resilient. "Notions of purpose are central underpinnings of the world's religions."

Reasoning about all aspects of nature in non-teleological physical-reductionist terms is a relatively recent development in the history of human thought (Kelemen 1999a), and contemporary adults are still surprisingly bad at it. For example, evolution is generally misconstrued as a quasi-intentional needs-responsive designing force (Kelemen 2004). But our brains did not evolve "to enable consciousness." Our brains evolved, and consciousness resulted. No purpose, just causes.

Aristotle distinguished "efficient" causes (the antecedent sources of objects and events) from "final" causes (the ends, goals, functions, or purposes of objects or events). Unfortunately, his focus was on the latter. He applied teleological explanations to all living and nonliving natural phenomena. For example, leaves exist on a plant to provide shade, and water exists on Earth to sustain life (Kelemen et al. 2013, 1074). Since the Renaissance, physical scientists have overtly rejected teleological explanation in search of physical-causal, "efficient" explanations. However, under psychological stress even physical scientists will tend to revert to default teleological explanations such as endorsement of "trees produce oxygen so that animals can breathe" (Kelemen et al. 2013).

So promiscuous teleological explanation is almost universal among children but is also a developmentally persistent cognitive default position. For example, the tendency returns in strength if a person develops Alzheimer's disease later in life (Lombrozo et al. 2007).

Kelemen et al. (2013) concluded that the teleological tendency is robust, resilient, developmentally enduring, arises early, and becomes masked with cognitive maturity and education but is not replaced. Hence religious belief is cognitively natural and culturally resilient. "Notions of purpose are central underpinnings of the world's religions" (Kelemen et al. 2013, 1081).

The rise and persistence of the intelligent design argument for God in the wake of the demolition of creationism's simplistic claims is an illustration of this resilience (Kelemen and Rosset 2009). Children naturally see lions, mountains, and icebergs as "made for something" (Kelemen 1999b), irrespective of parental explanations (Kelemen et al. 2005) or ambient cultural religiosity (Kelemen 2003). Later in life they will still tend to assume that "Mother Nature" or "Gaia" is a goal-directed, self-preserving organism (Kelemen and Rosset 2009)—another "attribution of agency." "As evidenced by many religions, artifact design represents a powerful analogical base that children and adults use to understand the natural world" (Kelemen et al. 2012, 440).

"Promiscuous teleological intuition" and excessive "attribution of agency" do not explain all indiscriminate, non-skeptical, or paranormal beliefs. Other cognitive errors, such as confirmation bias, must be invoked to understand why so many think that acupuncture will cure migraine or that a plesiosaur lurks in Loch Ness.

However, a tendency toward conspiracism may be explained in exactly the same way as ubiquitous god-belief. The dictum "If it's a choice between a conspiracy and a cock-up . . ." contrasts purposeful, powerful, inferred, possibly malevolent agency with natural, caused-but-not-directed, "random" events controlled by only the laws of nature and mathematics. Some people clearly have a strong cognitive trait tendency to assume conscious purposeful agents are behind most events in society. If not God or Satan, then powerful people.

If the similarity is meaningful, we would expect that people with a strong cognitive bias toward promiscuous teleological intuition would also tend toward both god-belief and conspiracism. This is exactly what we find. For example, Oliver and Wood (2012) found that a supernatural belief scale strongly predicted support for conspiracism. Both correlated with a measure of magical thinking. To illustrate, they found an extremely high correlation between conspiracism and belief that "We are currently living in End Times as foretold by Biblical Prophecy."

The bizarre and surprising observation that, even in the face of profound advances in the scientific physical-reductionist understanding of nature, most of humanity insists on clinging to evidence-sparse, redundant, arbitrary notions of gods, demons, goblins, nature spirits, or the recent vacuous fallback "feeling" that "there just must be something there," has not been adequately explained until now. This has left

psychologists unsatisfied, allowed theists to argue that the cross-cultural profusion of metaphysical belief is evidence that there must be something to it, and atheists and agnostics with some uncertainty as to how to correct this widespread "dangerous delusion."

A recently developed, well-supported explanatory hypothesis suggests that the ubiquity of human belief in supernatural agents in the face of a paucity of evidence derives from an innate cognitive tendency to attribute agency to all active entities in the world and to therefore assume purposive motivations within those entities, and indeed to the world itself. This tendency is highly adaptive for infants and young children and will therefore be favored in evolutionary terms.

That it is innate is supported by its universality among children and its cross-cultural dominance among adults. Kelemen (2004) has described a scientific education as suppressing rather than replacing teleological explanatory tendencies, citing the finding that scientifically uneducated Romanian Gypsy adults have promiscuous teleological intuitions much like scientifically naïve British and American elementary school children (Casler and Kelemen 2008).

However, such findings do not imply a dramatically new solution. We have long known that education can make people less superstitious and less religious. Less educated and politically knowledgeable people exhibit higher levels of conspiracism (Oliver and Wood 2012). Interestingly, Kelemen et al.'s (2013) physical scientists (who became more teleological under pressure) performed no better than equivalently schooled humanities scholars, and both held their line better than undergraduates. So a specialized scientific training and knowledge base is not necessary. *Any* further education seems to help one outgrow teleological promiscuity.

There is no perfect negative correlation between intelligence and teleological delusion. Great minds have applied themselves to the arbitrary theological intricacies of the gods' purposes for us. The ability to see past or see through our unjustified attributions of agency and purpose in the world may have more to do with *imagination* (Bakker 2013) once an alternative physical-causal worldview has been introduced, by education, as a sufficient explanatory option. The question "What if…?" has led to more insights than has brute intellectual power.

The question "What if the world is *really* big and round and there is no absolute 'up' and 'down'?" overtook the flat-Earth theory. "What if the world is not 6,000 years old but is *billions* of years old?" has nearly supplanted creationism. "What if I *am* my brain? How would it look to me?" has dented the need for a soul or immaterial mind to explain consciousness (Bakker 2013).

So the best cures for teleological delusion are those we already know of: A high level of education; encouragement to think independently, flexibly, and with insatiable curiosity; and having an input as soon as people are capable of abstract conceptual thought.

The major contribution of this new evidence-based conceptualization of the problem is that we now know more clearly *what* we are fighting. Promiscuous teleological intuition is powerful, innate, and adaptive for the young. But it is not adaptive for the adolescent or adult leaving the human environment of the family hut for the natural world of the forest, where food does not present in the hands of intentional beings but on the branches of naturally occurring trees. Similarly, humanity may now use its growing knowledge and insight to escape its dependent teleological worldview in favor of a more mature one.

Ironically, the motto thus reinforced may be a biblically sourced one:

> "When I was a child, I spoke like a child, I thought like a child, I reasoned like a child. When I became a man, I gave up childish ways." (1 Corinthians 13:11) ■

References

Bakker, Gary M. 2013. *God: A Psychological Assessment.* Boca Raton, FL: Universal-Publishers.

Bering, J. 2012. *The Belief Instinct: The Psychology of Souls, Destiny, and the Meaning of Life.* New York: W.W. Norton & Co.

Casler, K., and D. Kelemen. 2008. Developmental continuity in teleo-functional explanation: Reasoning about nature among Romanian Romani adults. *Journal of Cognition and Development* 9: 340–362.

d'Mayberry, D. 2014. The psychology of faith: The human quest for meaning. *The Australian Atheist* 43(1): 15–18.

Kelemen, D. 1999a. Beliefs about purpose: On the origins of teleological thought. In M. Corballis and S. Lea (Eds.), *The Descent of Mind: Psychological Perspectives on Hominid Evolution* (pp. 278–294). Oxford, England: Oxford University Press.

———. 1999b. The scope of teleological thinking in preschool children. *Cognition* 70: 241–272.

———. 2003. British and American children's preferences for teleo-functional explanations of the natural world. *Cognition* 88: 201–221.

———. 2004. Are children "intuitive theists"? Reasoning about purpose and design in nature. *Psychological Science* 15(5): 295–301.

Kelemen, D., M. Callanan, K. Casler, et al. 2005. Why things happen: Teleological explanation in parent-child conversations. *Developmental Psychology* 41: 251–164.

Kelemen, D., and E. Rosset. 2009. The human function compunction: Teleological explanation in adults. *Cognition* 111: 138–143.

Kelemen, D., J. Rottman, and R. Seston. 2013. Professional physical scientists display tenacious teleological tendencies: Purpose-based reasoning as a cognitive default. *Journal of Experimental Psychology: General* 142(4): 1074–1083.

Kelemen, D., R. Seston, and L. Saint Georges. 2012. The designing mind: Children's reasoning about intended function and artifact structure. *Journal of Cognition and Development* 13(4): 439–453.

Lombrozo, T., D. Kelemen, and D. Zaitchik. 2007. Inferring design: Evidence of a preference for teleological explanations in patients with Alzheimer's disease. *Psychological Science* 18(11): 999–1006.

Oliver, J.E., and T.J. Wood. 2012. Conspiracy theories, magical thinking, and the paranoid style(s) of mass opinion. University of Chicago Department of Political Science Working Paper Series. Online at http://political-science.uchicago.edu/faculty-workingpapers/.

Satel, S.L., and S.O. Lilienfeld. 2013. *Brainwashed: The Seductive Appeal of Mindless Neuroscience.* New York: Basic Civitas Books.

Taylor, M. 1999. *Imaginary Companions and the Children Who Create Them.* New York: Oxford University Press.

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CRAZY BELIEFS, SANE BELIEVERS

Toward a Cognitive Psychology of Conspiracy Ideation

Where do conspiracy beliefs come from? Recent behavioral research suggests that they do not reflect pathology or lazy thinking but may instead come from normal, rational minds.

PRESTON R. BOST

As part of its educational mission, the Skeptical Inquirer regularly publishes critical investigations into conspiracy theories—claims that organizations of powerful, self-serving entities manipulate world events for their own benefit behind the scenes, away from the prying eyes of the public. Readers of this magazine are familiar with the common properties of conspiracy theories: their selective sifting of evidence (McHoskey 1995), their habit of growing more complicated and improbable over time to incorporate additional actors and events (Keeley 1999), their astonishing tendency to assimilate disconfirming evidence as further evidence *in favor* of the theory (Kramer and Gavrieli 2005), and their poisonous influence on discourse about public institutions and policies (Swami 2012). It is of little wonder that the skeptical community's attempts at education are leavened with hostility. Much of our language, often in so many words, conveys the belief that conspiracy theories are the product of anti-intellectual and even psychologically disordered minds.

This palpable frustration is an understandable reaction to failing in the skeptical mission. And fail we have, at least in educating the populace not to believe in conspiracy theories. In the nearly four decades of this publication, belief in conspiracy theories (which I will term "conspiracy ideation") shows no signs of abating, let alone disappearing. Conspiracy theories remain a staple of American popular culture (Kelley-Romano 2008) and are readily found in cultures across the globe (Sunstein and Vermeule 2009; Swami and Coles 2010). To compound skeptics' frustration, they tend to coexist with paranormal beliefs (Drinkwater et al. 2012; Swami et al. 2011), especially New Age beliefs (Newheiser et al. 2011). And one well-known research finding is that conspiracy theories, like other deeply held beliefs, are strongly resistant to disconfirmation (McHoskey 1995; Nyhan and Reifler 2010; Sunstein and Vermeule 2009).

One irony of this state of affairs is that the skeptical community has engaged the discussion of conspiracies while missing a significant arrow in its quiver: a scientific understanding of the psychological underpinnings of conspiracy ideation. Until recently, there has been little behavioral research into the structure of conspiracy ideation, the people who adopt conspiratorial beliefs, and the circumstances under which they adopt them. This omission is puzzling because conspiracy theories exist not on the fringe but in the mainstream, enough so to be regarded as cognitively normal. As such they invite careful study of why they easily take root in the human mind (Bost and Prunier 2013; Drinkwater et al. 2012; Swami and Coles 2010). Fortunately, the number of peer-reviewed empirical publications on the topic has increased rapidly in only the last five years. As the literature has matured, our theoretical understanding of the origins of conspiracy ideation has begun to sharpen.

Perhaps the most consistent finding is that people are relatively consistent in their conspiracy ideation; if they believe one conspiracy theory, they tend to have other conspiratorial beliefs (e.g. Swami et al. 2011). This pattern holds if the second belief is a real-life conspiracy theory (Swami and Furnham 2012), a general belief that conspiracies regulate human events (Steiger et al. 2013), a fictitious conspiracy story (Swami et al. 2011), or a view of oneself as a victim of

conspiracies in one's own life (Butler et al. 1995). Interestingly, conspiracy ideation also can bridge contradictory theories; Wood and colleagues (Wood et al. 2012) observed that participants who endorsed the belief that Princess Diana had been murdered also tended to endorse the claim that she had faked her death. Researchers have taken these findings to confirm one of the first clearly articulated theories of conspiracy ideation: Goertzel's (1994) concept of a monological belief system, in which conspiracy ideation is a worldview—rather than a collection of discrete beliefs—in which multiple conspiracy theories reinforce each other. Although researchers have found that certain conspiracy theories are bound to a particular social/political context and not predictive of general conspiracy ideation (Swami 2012), the literature is converging on the conclusion that in the main, conspiracy ideation reflects a generalized way of thinking about the world (Brotherton et al. 2013; Wood et al. 2012).

The next question, therefore, is how this mode of thought arises. The research agenda so far has strongly emphasized the pursuit of the "conspiracy theorist"—the person with a constellation of traits that predisposes him or her to conspiracy ideation. To what extent can we draw a sharp distinction between the psychological profiles of the conspiracy believer and the conspiracy skeptic? The research on this question has been, to put it mildly, mixed. First, a surprise: conspiracy ideation does not appear to reflect an inability or disinclination to think critically. For instance, conspiracy ideation has not been linked to lower levels of education (Bogart and Thorburn 2006; Clark et al. 2008; Parsons et al. 1999; Simmons and Parsons 2005). In fact, in certain cases education may enhance conspiracy ideation; those educated about documented race-based conspiracies, such as the infamous Tuskeegee syphilis study, are more likely to endorse race-based conspiracy theories in which the United States government is alleged to be targeting the African-American population (Nelson et al. 2010). Further, conspiracy ideation is not correlated with "need for cognition"—a reliable measure of the inclination to engage in complex critical thinking (Abakalina-Papp et al. 1999). Neither is it associated with "need for cognitive closure," a trait characterized by oversimplification of complex issues and biased assimilation of evidence (Leman and Cinnirella 2013).

What about personality? An examination of the Big Five dimensions (openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism), which together capture the primary vectors of human personality, has been only marginally revealing. Swami and colleagues (Swami et al. 2010; Swami et al. 2011; Swami and Furnham 2012) have observed that conspiracy ideation is associated with lower levels of agreeableness (a trait that captures one's ability to get along with others and accept them as good-faith actors), but this association has not always been replicated (Furnham 2013). Negative associations between conspiracy ideation and other dimensions, such as neuroticism and openness to experience, have been reported (Furnham 2013; Swami et al. 2013), but overall the correlations between conspiracy ideation and Big Five traits tend to be small and/or unstable (Brotherton et al. 2013).

Demographic variables present a mixed bag. Conspiratorial worldviews are not generally related to either age or sex (e.g., Parsons et al. 1999; Simmons and Parsons 2005). Racial and political affiliation also are not associated with general conspiratorial ideation, but do appear to predict belief in particular conspiracies to which one's group may be vulnerable (e.g. Abakalina-Paap et al. 1999)—an important pattern to which we will return later. For example, African Americans, much more so than whites, endorse conspiracy

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theories in which African Americans are the targets—such as the claim that the United States government created the HIV virus to exterminate the black population (e.g. Bogart and Thorburn 2003).

Although numerous researchers have argued that psychopathology is insufficient to account for the prevalence of conspiracy theories (Kramer and Gavrieli 2005; Steiger et al. 2013; Swami and Coles 2010; Uscinski et al. 2011), others have forcefully argued for a conceptual relation between conspiratorial ideation and the distortions of reality characteristic of paranoia (Zonis and Joseph 1994). Researchers have consistently found that conspiracy ideation is associated with low levels of trust (Abakalina-Papp et al. 1999; Goertzel 1994) and even subclinical paranoia (Darwin et al. 2011; Grzesiak-Feldman and Ejsmont 2008). Research also has probed whether conspiracy ideation is related to schizotypy, a personality disorder characterized in part by lower-grade, dispositional suspicion of the type found in some forms of schizophrenia. Using a scale called the O-LIFE (Mason et al. 1995), which measures four discrete dimensions of schizotypy, Swami and colleagues (Swami et al. 2013) observed that conspiracy ideation is associated with higher scores on the Unusual Experiences Scale, which measures suspicion as well as other perceptual and cognitive distortions. It appears therefore that conspiracy ideation is reliably related to suspicion. Because suspicion requires selective attention to another's motive, these findings connect with the observation that acceptance of fictional conspiracy stories increases when the story highlights the potential motive of the alleged conspirator, even when the documented evidence of a conspiracy is poor (Bost and Prunier 2013). Importantly, the connection between suspicion and conspiracy ideation does not in itself imply that the suspicion is pathological. Numerous authors have argued that a degree of suspicion is an adaptive trait in humans, who rely on it to promote equity in the transactions inherent to social living (for one such argument, see Vohs et al. 2007). Attention to others' motives, although characteristic of paranoia (Darwin et al. 2011), is therefore an ingredient in everyday social interaction (e.g., Cosmides and Tooby 1992). Seen in this light, conspiracy ideation represents not an irrational departure from reality but perhaps rather an intensified focus on information that all humans regularly rely on in social cognition. In other words, some conspiracy ideation may be grounded in the rules of human cognition, which employ a dose of suspicion as a protective mechanism. This notion is broadly consistent with Sunstein and Vermeule's (2009, 208) suggestion that conspiracy theories require that all events be seen as the product of some actor's intention.

The extent to which the suspicion of a conspiracy believer is primary (that is, ingrained as its own personality trait) or instead derives from other cognitions or circumstances is unclear. One of the earliest and most interesting findings in the literature is that those who believe in conspiracies demonstrate higher levels of powerlessness and alienation from institutions (Goertzel 1994; Abakalina-Paap et al. 1999; Swami et al. 2010). These findings suggest that conspiracy theorists perceive themselves as vulnerable to exploitation—a circumstance that would call for heightened suspicion. Kramer and Gavrieli (2005) have argued that threat perception—really, hypervigilance to threat—is central to conspiracy ideation. If true, this notion may explain a

pattern discussed earlier: that even those who are not predisposed to conspiracy ideation may nonetheless accept a conspiracy theory if the alleged target is their racial, social, or political affiliation. Again, this framework ascribes a type of rationality to the conspiratorial mindset, grounding it in the defensive posture of someone with a heightened sensitivity to potential threat.

Recent findings confirm the basic idea that threat perception and/or perceived vulnerability contribute to conspiracy ideation. In one particularly important study, Whitson and Galinsky (2008) conducted a series of experiments manipulating the extent to which participants perceived control over their worlds—for instance, by having them recall different types of autobiographical memories in which they were more or less in control of events, or by describing the stock market as either random (i.e., unpredictable or out of control) or stable, or by having them engage in a novel cognitive task in which the feedback to participants was either meaningful (suggesting that the participant had control over the outcome) or random. Across the experiments, participants whose sense of control had been undermined consistently tended to over-perceive patterns in subsequent stimuli by making illusory correlations, seeing visual images in random dots, and—notably—perceiving a greater likelihood of conspiracy behind a fictitious event. The authors argued that these false alarms reflect not oversimplification of the available data but a sophisticated exercise in pattern perception. These findings lend some empirical support to a proposal articulated by Michael Shermer: that conspiracy theories are a byproduct of an innate human tendency to seek patterns in the environment, preferring false alarms to misses (Shermer 2011; for elaboration on this point, see Kramer and Gavrieli 2005). Whitson and Galinsky (2008) refine this perspective by defining some of the conditions in which enhanced pattern-seeking may be invoked—specifically the experience of a threat to one's sense of control over events in one's life.

What types of perceived threats appear related to conspiracy beliefs, and where do these perceptions come from?

What types of perceived threats appear related to conspiracy beliefs, and where do these perceptions come from? Grzesiak-Feldman (2007; 2013) has studied the relationships among dispositional anxiety ("trait"), anxiety in the moment ("state" anxiety), and beliefs in specific conspiracies, yielding inconsistent findings. It appears that the arousal of simple anxiousness is insufficient to evoke conspiratorial ideation, and that the perceived threat must instead have a particular flavor. In some cases the threat is more general and dispositional. Newheiser et al. (2011) observed that existential threat—anxiety related to one's mortality—was a predictor of belief in the Da Vinci Code conspiracy. For others, the threat appears to be more specific and experiential: Bogart and Thorburn (2006) noted that African-American men, who report more experiences with discrimination than African-American women, also report greater belief in conspiracy theories related to the medical establishment, which plays a prominent role in claims that the HIV virus was created to eradicate the African-American population. For still others, the threat may be political: Uscinski and colleagues' (2011) inventory of letters to the *New York Times* found that conspiracy allegations tracked with the movement of political parties in and out of power, with minority-party affiliates primarily responsible for propagating government-related conspiracy theories. Sometimes the threat emerges from a specific event. Rothschild et al. (2012)

A person without the capacity for suspicion is a target for exploitation, and the necessary kernel of suspicion that exists in all of us might well become turbocharged under the proper circumstances.

found that when participants read about environmental destruction caused by unknown forces, they attributed the blame to a scapegoat—an entity with the means and desire to subvert others' well-being for its own gain. Blaming the scapegoat restored participants' feelings of control. Importantly, participants given a chance to affirm their feelings of personal control were less likely to blame the scapegoat.

Taken together with Whitson and Galinsky's (2008) findings, this pattern of results suggests that a lack of control over one's fate—a sense of being vulnerable to outside forces—tends to heighten vigilance, increasing the tendency to look for patterns and for someone to blame; such is the raw material of conspiracy theories. Increasingly, therefore, those who study conspiracy ideation have been forgoing references to pathology, substituting instead the language of cognitive adaptation. There is a long tradition in the cognitive sciences of seeing "errors" in reasoning as reflections of the normal operation of our goal-oriented information processing systems, and perhaps we can think of conspiracy theories this way as well. As Kramer and Gavrieli (2005, 248) put it, ". . . Conspiracy theories can be construed as complex forms of social cognition that are the end product of an intendedly adaptive sensemaking or coping process." Given that humans possess the cognitive apparatus required to avoid exploitation (Cosmides and Tooby 1992), it seems reasonable—though not theoretically definitive at present—to consider that conspiracy ideation could be a natural byproduct of such a system, triggered by cues such as perceived vulnerability, or the perception that the alleged conspirator has a motive to engage in subterfuge (Bost et al. 2010; Bost and Prunier 2013; Sunstein and Vermeule 2009).

This article began with the suggestion that we have had little success in beating back conspiracy theories in part because we have failed to study sufficiently the psychological processes underpinning such beliefs. Though a full discussion of the topic is beyond the scope of this article, researchers continue to argue that conspiratorial ideation has harmful effects on both public discourse and personal behavior (e.g., Jolly 2013) and is therefore worth fighting. What hope does the recent surge in research offer? One suggestion implicit in the literature is that we may have to live with some level of conspiracy ideation as a byproduct of the cognitive architecture that comes with communal living. A person without the capacity for suspicion is a target for exploitation, and the necessary kernel of suspicion that exists in all of us might well become turbocharged under the proper circumstances.

And here is where the research has begun to make significant strides: in shifting the conversation ever so slightly from the image of foil-hat-wearing, conspiracy-believing "other people" to a more forgiving conception of conspiracy ideation arising in normal people exposed to the proper triggers—for example, circumstances that evoke feelings of vulnerability. With research having failed so far to draw a bright line between the forensic profiles of conspiracy believers and nonbelievers, searching for additional triggers may be a fruitful avenue for further investigation. Those of us in this young field should also push forward in refining the operational definition of "conspiracy ideation." Researchers have crafted many different surveys to measure conspiracy beliefs, most of them with uncertain psychometric properties (Brotherton et al. 2013). Agreement on properly validated measurements will ultimately help the research community determine which of the current findings merit our confidence over the long term. In the meantime, the skeptical community may find reason to be less frustrated with conspiracy believers. The research findings so far have done much to humanize them. ■

References

Abakalina-Paap, Marina, Walter G. Stephan, Traci Craig, et al. 1999. Beliefs in conspiracies. *Political Psychology* 20(3): 637–647.

Bogart, Laura M., and Sheryl Thorburn. 2003. Exploring the relationship of conspiracy beliefs about HIV/AIDS to sexual behaviors and attitudes among African-American adults. *Journal of the National Medical Association* 95(11): 1057–1065.

———. 2006. Relationship of African Americans' sociodemograhic characteristics to belief in conspiracies about HIV/AIDS and birth control. *Journal of the National Medical Association* 98(7): 1144–1150.
Bost, Preston R., and Stephen G. Prunier. 2013. Rationality in conspiracy beliefs: The role of perceived motive. *Psychological Reports: Sociocultural Issues in Psychology* 113(1): 118–128.
Bost, Preston R., Stephen G. Prunier, and Allen J. Piper. 2010. Relations of familiarity with reasoning strategies in conspiracy beliefs. *Psychological Reports* 107(2): 593–602.
Brotherton, Robert, Christopher C. French, and Alan D. Pickering. 2013. Measuring belief in conspiracy theories: The generic conspiracist beliefs scale. *Frontiers in Psychology* 4: 279.
Butler, Lisa D., Cheryl Koopman, and Philip G. Zimbardo. 1995. The psychological impact of viewing the film "JFK": Emotions, beliefs, and political behavioral intentions. *Political Psychology* 16(2): 237–257.
Clark, April, Jennifer K. Mayben, Christine Hartman, et al. 2008. Conspiracy believers about HIV infection are common but not associated with delayed diagnosis or adherence to care. *AIDS Patient Care and STDs* 22(9): 753–759.
Cosmides, Leda, and John Tooby. 1992. Cognitive adaptations for social exchange. *In The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, edited by L. Cosmides and J. Tooby, 163–228. New York: Oxford University Press.
Darwin, Hannah, Nick Neave, and Joni Holmes. 2011. Belief in conspiracy theories: The role of paranormal beliefs, paranoid ideation and schizotypy. *Personality and Individual Differences* 50: 1289–1293.
Drinkwater, Ken, Neil Dagnall, and Andrew Parker. 2012. Reality testing, conspiracy theories, and paranormal beliefs. *Journal of Parapsychology* 76(1): 57–77.
Furnham, Adrian. 2013. Commercial conspiracy theories: A pilot study. *Frontiers in Psychology* 4:379.
Goertzel, Ted. 1994. Belief in conspiracy theories. *Political Psychology* 15(4): 731–742.
Grzesiak-Feldman, Monika. 2007. Conspiracy thinking and state-trait anxiety in young Polish adults. *Psychological Reports* 100(1): 199–202.
———. 2013. The effect of high-anxiety situations on conspiracy thinking. *Current Psychology* 32(1): 100–118.
Grzesiak-Feldman, Monika, and Anna Ejsmont. 2008. Paranoia and conspiracy thinking of Jews, Arabs, Germans and Russians in a Polish Sample. *Psychological Reports* 102(3): 884–886.
Jolly, Daniel. 2013. Are conspiracy theories just harmless fun? *The Psychologist* 26(1): 60–62.
Keeley, Brian L. 1999. Of conspiracy theories. *The Journal of Philosophy* 96(3): 109–126.
Kelley-Romano, Stephanie. 2008. Trust no one: The conspiracy genre on American television. *Southern Communication Journal* 73(2): 105–121.
Kramer, Roderick, and Dana Gavrieli. 2005. The perception of conspiracy: Leader paranoia as adaptive cognition. In *The Psychology of Leadership*, edited by D. Messick and R. Kramer, 251–261. Mahway, NJ: Lawrence Erlbaum Associates.
Leman, Patrick J., and Marco Cinnirella. 2013. Beliefs in conspiracy theories and the need for cognitive closure. *Frontiers in Psychology* 4:378.
Mason, Oliver, Gordon Claridge, and Mike Jackson. 1995. New scales for the assessment of schizotypy. *Personality and Individual Differences* 18: 7–13.
McHoskey, John W. 1995. Case closed? On the John F. Kennedy assassination: Biased assimilation of evidence and attitude polarization. *Basic and Applied Social Psychology* 17(3): 395–409.
Nelson, Jessica C., Glenn Adams, Nyla R. Branscombe, et al. 2010. The role of historical knowledge in perception of race-based conspiracies. *Race and Social Problems* 2(2): 69–80.
Newheiser, Anna-Kaisa, Miguel Farias, and Nicole Tausch. 2011. The functional nature of conspiracy beliefs: Examining the underpinnings of belief in the *Da Vinci Code* conspiracy. *Personality and Individual Differences* 51: 1007–1011.
Nyhan, Brendan, and Jason Reifler. 2010. When corrections fail: The persistence of political misperceptions. *Political Behavior* 32: 303–330.
Parsons, Sharon, William Simmons, Frankie Shinhoster, et al. 1999. A test of the grapevine: An empirical examination of conspiracy theories among African Americans. *Sociological Spectrum* 19: 201–222.
Rothschild, Zachary K., Mark J. Landau, Daniel Sullivan, et al. 2012. A dual-motive model of scapegoating: Displacing blame to reduce guilt or increase control. *Journal of Personality and Social Psychology* 102(6): 1148–1163.
Shermer, Michael. 2011. *The Believing Brain*. New York: Times Books.
Simmons, William Paul, and Sharon Parsons. 2005. Beliefs in conspiracy theories among African Americans: A comparison of elites and masses. *Social Science Quarterly* 86(3): 582–598.
Steiger, Stefan, Nora Gumhalter, Ulrich Tran, et al. 2013. Girl in the cellar: A repeated cross-sectional investigation of belief in conspiracy theories about the kidnapping of Natascha Kampusch. *Frontiers in Psychology* 4: 297.
Sunstein, Cass R., and Adrian Vermeule. 2009. Conspiracy theories: Causes and cures. *The Journal of Political Philosophy* 17(2): 202–227.
Swami, Viren. 2012. Social psychological origins of conspiracy theories: The case of the Jewish conspiracy theory in Malaysia. *Frontiers in Psychology* 3: 280.
Swami, Viren, Tomas Chamorro-Pemuzic, and Adrian Furnham. 2010. Unanswered questions: A preliminary investigation of personality and individual difference predictors of 9/11 conspiracist beliefs. *Applied Cognitive Psychology* 24: 749–761.
Swami, Viren, and Rebecca Coles. 2010. The truth is out there. *The Psychologist* 23(7): 560–563.
Swami, Viren, Rebecca Coles, Stefan Steiger, et al. 2011. Conspiracist ideation in Britain and Austria: Evidence of a monological belief system and associations between individual psychological differences and real-world and fictitious conspiracy theories. *British Journal of Psychology* 102: 443–463.
Swami, Viren, and Adrian Furnham. 2012. Examining conspiracist beliefs about the disappearance of Amelia Earhart. *The Journal of General Psychology* 139(4): 244–259.
Swami, Viren, Jakob Pietschnig, Ulrich S. Tran, et al. 2013. Lunar Lies: The impact of informational framing and individual differences in shaping conspiracist beliefs about the moon landings. *Applied Cognitive Psychology* 27: 71–80.
Uscinski, Joseph, Joseph M. Parent, and Bethany Torres. 2011. Conspiracy theories are for losers. Paper presented at the 2011 American Political Science Association annual conference, Seattle, Washington. Online at http://www.joeuscinski.com/uploads/ConspiraciesareforlosersAPSA.pdf.
Vohs, Kathleen D., Roy F. Baumeister, and Jason Chin. 2007. Feeling duped: Emotional, motivational, and cognitive aspects of being exploited by others. *Review of General Psychology* 11(2): 127–141.
Whitson, Jennifer A., and Adam D. Galinsky. 2008. Lacking control increases illusory pattern perception. *Science* 322(3): 115–117.
Wood, Michael J., Karen M. Douglas, and Robbie M. Sutton. 2012. Dead and alive: Beliefs in contradictory conspiracy theories. *Social Psychological and Personality Science* 3(6): 767–773.
Zonis, Marvin, and Craig Joseph. 1994. Conspiracy thinking in the Middle East. *Political Psychology* 15(3): 443–459.

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From Our Archives

This related Skeptical Inquirer *article is available on our csicop.org website:*

The Conspiracy Meme: Why Conspiracy Theories Appeal and Persist. By Ted Goertzel. Vol. 35, No. 1, January/February 2011.

Modern Geocentrism

A Case Study of Pseudoscience in Astronomy

A small group of pseudoscience practitioners called modern geocentrists still suggest that the Earth is in fact the center of the universe. An astronomer examines their ideas and uses them to suggest common properties of pseudoscience purveyors.

MATTHEW P. WIESNER

Astronomy is both an ancient and a rapidly growing modern science, and there are many opportunities within astronomy to advance human knowledge. But astronomy is also a discipline that attracts practitioners of pseudoscience who question and spread misinformation about the science.

I present an analysis of one small group of astronomical pseudoscientists, the modern geocentrists. This group purports to show that Copernicus, Galileo, Einstein, and many others were in fact wrong in their conclusions and that the Earth is the center of the universe. While the impact of this group may be small, it is a perfect specimen of astronomical pseudoscience. From quote mining to math avoidance to the ever-present conspiracy theories, modern geocentrism shows us how pseudoscientists operate. By studying these and other groups and teaching about them, we can show students and the public what not to do and how to recognize pseudoscience.

What Is Modern Geocentrism?

Modern geocentrism is the idea that the heliocentric theory developed by Copernicus, Galileo, and many others is in fact wrong and the Earth is the center of the universe. It is spearheaded by a man named Robert Sungenis, who holds degrees in theology. The major work on modern geocentrism is a book about how the Catholic Church was right to condemn Galileo called *Galileo Was Wrong, the Church Was Right* (Sungenis and Bennett 2014); this tome takes up 1,200 pages in two volumes and was developed from Sungenis's 700-page doctoral thesis written on geocentrism at Calamus International University, an unaccredited distance learning institution in the Republic of Vanuatu. There was a conference on geocentrism held in South Bend, Indiana, in November 2010; there were nine speakers and about one hundred attendees. Sungenis recently followed up with a popular-science version of his book called *Geocentrism 101* (Sungenis 2014). This year Sungenis, producer Rick Delano, and their group have finished a movie on geocentrism titled *The Principle*, about the Copernican principle, the idea that Earth is not in a special place in the universe. This is closely related to the cosmological principle, the idea that the universe is about the same everywhere and there are no special places in the universe. His production group is currently attempting to get this movie into major theatres. Modern geocentrism obtained its fifteen minutes of fame when the notable people quoted or involved in *The Principle* found out it was a movie about pseudoscience. This included narrator (and *Star Trek: Voyager* actress) Kate Mulgrew and scientists Lawrence Krauss, Max Tegmark, George Ellis, and Michio Kaku, who were quoted in the film.

Modern geocentrism is an idea developed by a small group of highly conservative Catholics. Religion is an important part of the argument of the modern geocentrists (as may be noted in the title of the movement's primary book). The modern geocentrists divide their arguments into religious arguments and scientific arguments. The religious arguments are, in general, that many passages of the Bible suggest the Sun goes around a stationary Earth and many popes of the Catholic Church stated that the Earth is in the center of the universe. Considering that most astronomers (and thus most people) thought the Earth was the center of the universe until the seventeenth century, neither of these things is surprising.

The Basic Scientific Premises of Modern Geocentrism

The basic scientific premise of modern geocentrism is that the cosmological principle is wrong and that there is

a preferred place in the universe, the Earth. They suggest that if we throw out the cosmological principle, physics will still work, just with the Earth forming the center of the universe. As part of throwing out this principle, though, they also end up throwing out the vast majority of physics, including the standard model of cosmology, special and general relativity, quantum mechanics, and more. Their position is that Einstein and others were in fact really smart, but they were blinded by their conviction that the Earth is not the center of the universe. They propose that these scientists were materialists who didn't like the religious implications of a geocentric universe. Einstein and others failed to see the right answer because of their innate biases and therefore pretty much all of modern physics is wrong.

The modern geocentrists propose that the reason the Sun rises and sets and the stars rise and set is that the entire universe revolves around Earth once a day. They indicate that this could be possible if the entire universe were distributed so that Earth is the center of mass of the universe, perfectly balanced. They present no observational evidence for this balance; they just try to make the point that it is conceivable that physics could allow this. Sungenis begins his book *Geocentrism 101* with the statement, "Unbeknownst to almost the entire human race is the fact that no one in all of human history has ever proven the Earth moves in space" (Sungenis 2014).

Sungenis then goes through the many different pieces of evidence that indicate the motion of the Earth and attempts to find a reason he doesn't have to believe the Earth is moving. Of course as philosopher of science Karl Popper tells us, if you don't want something to be true, you will find a way to interpret the facts to support your belief (Popper 1963), which is exactly what the geocentrists do. For example, the Foucault pendulum changes its direction of oscillation continuously throughout the day due to the rotation of the Earth. Sungenis counters and says that he can achieve the same effect if the entire universe is rotating around the Earth.

Sungenis spends a lot of time on the Michelson-Morley experiment, an experiment that showed no difference in light travel time whether light was going parallel or perpendicular to the motion of the Earth. This experiment was looking for evidence of the medium in which it was believed electromagnetic waves propagated, the lumineferous aether. Since there was no difference in travel time, there was no evidence of aether. Sungenis suggests that this is evidence that the Earth is not moving. He then spends time explaining why Einstein was wrong about both the special and the general theories of relativity. There is quite a bit of conspiracy theory in these chapters, accusing Einstein, scientists behind the global positioning system (GPS), and others with hiding the truth. Sungenis also rather blithely claims that lumineferous aether exists, without giving much information on its nature. (In *Galileo Was Wrong*, he explains that aether causes gravity.) Sungenis doesn't spend any time addressing the fact that special relativity is critical to much of modern technology, including most high-energy physics experiments.

Chapter 8 of *Geocentrism 101* begins with the statement, "Ten years after he invented the Special Theory of Relativity to answer the Michelson-Morley experiment, Einstein was forced to invent a second theory to compensate for what the first one lacked." Using words like *invent* implies that Einstein was just making things up. This sentence also betrays a deep lack of understanding of how the development of

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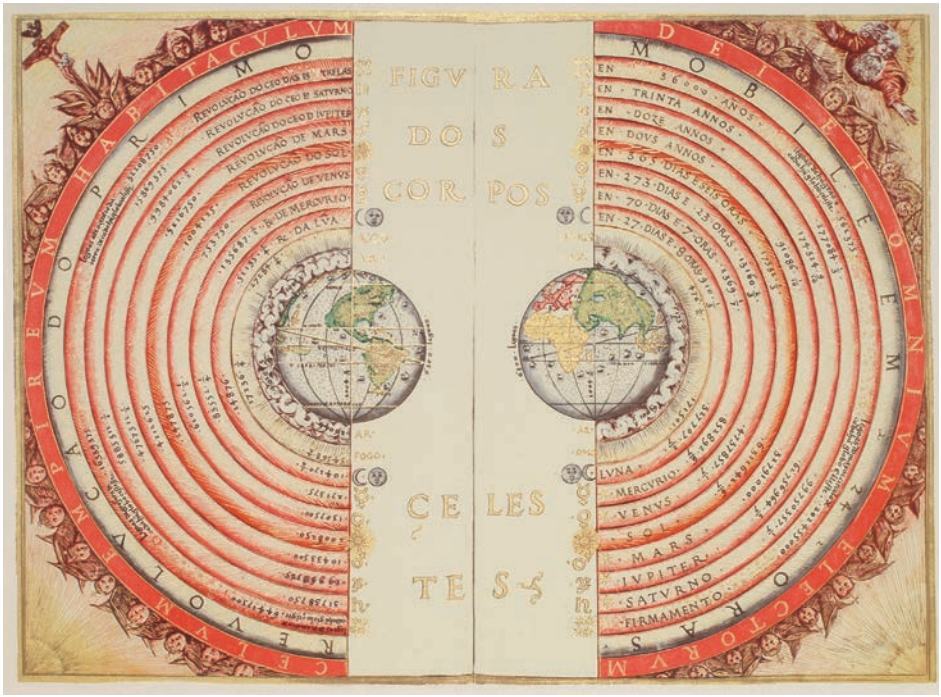

scientific theories actually works. Sungenis quotes Einstein to say, "The two sentences: 'the Sun is at rest and the Earth moves,' or 'the Sun moves and the Earth is at rest' would simply mean two different conventions concerning the two different coordinate systems" (Sungenis 2014). In other words, Einstein is saying the question of what is in the center of the universe is not an interesting one. Sungenis, however, uses this quote to suggest that a geocentric universe is possible.

Like most pseudoscientists, Sungenis is uncomfortable with math and likes to claim that math lies.

Chapter 9 of *Geocentrism 101* is titled, "The Big Bang: Invented to Suppress Geocentrism." Sungenis presents Einstein's "greatest blunder," the addition of the cosmological constant to the Einstein equation. He then claims, "In any case, adding an arbitrary component to make Einstein's equation balance with the data demonstrates how easy it was, and still is, to create mathematical equations that give an aura of knowledge and certainty" (Sungenis 2014). Like most pseudoscientists, Sungenis is uncomfortable with math and likes to claim that math lies. He claims next that, "If, as the statistics show, 99.99% of the galaxies are redshifted from our observation point, Earth, it means the universe is geocentric" (Sungenis 2014). This is quite a leap of logic, one that Sungenis does not illuminate with facts. He goes on to briefly discuss the big bang, but only in a very superficial way and in a way that implies that scientists were sitting around with beers and said, "Hey, why not a big bang?" Again, Sungenis has no real conception of how science works and so he suggests scientists make things up *ad hoc* and conspire to hide evidence about the failings of their theories. At the end of this chapter, the first few verses of *Genesis* are quoted in large text.

In Chapter 10, Sungenis discusses the cosmic microwave background (CMB; light from the big bang). He has already indicated that the big bang theory is fake, so it is surprising that he makes no explanation for the origin of the CMB; he simply uses it to prove his arguments. Sungenis describes the CMB experiment called the Cosmic Background Explorer (COBE): ". . . COBE showed that not only was a significant portion of the universe's radiation anisotropic and inhomogeneous, but also that it was distributed in well organized pockets or poles that created a specific geometry, all the way from the rim of the known universe to its hub in the center. Of course COBE's results did not appear on national news programs but it was very disturbing news for the inner sanctum of the science community" (Sungenis 2014). So here we can see demonstrations of highly nonscientific language (e.g., "rim of the known universe," "hub"), implications of conspiracy theory, and the rare use of the phrase "inner sanctum." The implication that anistropy (slight temperature differences) in the cosmic microwave background made scientists worried is wrongheaded; physicists were more concerned about the initially apparent absence of anistropy in the CMB than about the discovery of its presence. Sungenis goes on to spend a lot of time talking about the "Axis of Evil," an apparent alignment in the CMB signal with the ecliptic. While he never clearly articulates what exactly is aligned, he suggests that this clearly shows Earth is in the center of the universe.

The book next looks at dark matter and dark energy, which are again presented as *ad hoc* inventions scientists thought up to preserve their cherished theories. In the next chapter, Sungenis suggests that galaxies, quasars, and gamma ray bursts are all arranged in concentric shells centered on the Earth. To support this, he shows several diagrams showing locations of galaxies. This is a classic example of the use of plots to misrepresent information. He shows plots of galaxy distributions in the Sloan Digital Sky Survey, and shows how Earth is in the center. Well, of course it is, that's the point of observation. He does the same thing with a plot of quasars by redshift, showing a void in the center where Earth is. Again, this is what you'd expect, since quasars do not occur at low redshift. The book closes with a quote from the New Testament, applying it to us scientists as ". . . those who suppress the truth by their wickedness."

The Properties of Pseudoscience as Shown by Modern Geocentrism

The modern geocentrists will frequently point to a controversy or change in scientific theory as evidence of how astronomical science is failing. They do not understand that controversy and change is a sign of healthy science, not an indication of failure. They also frequently ask for absolute "proof" of scientific theories. What this demonstrates is that they do not understand that science does not offer absolute truth, nor does it offer absolute proof, nor can it promise to be unchanging. If science did not change in response to new evidence, it would be very poor at its job.

Motivated by Religion

A large portion of the geocentrists' time is spent presenting religious arguments for geocentrism. This is a common factor among many pseudoscientists; they start with a religious idea and then interpret science to be in accord with their preconceived idea. This is the issue with the young-Earth creationism movement as well. Creationists start with the belief that the *Genesis* account of creation is literally true and then reject any science that might contradict this. Ultimately, modern geocentrists are just a special kind of creationist, and their motivations and methods are very similar. In fact, there have been efforts to establish alliances between creationists and geocentrists.

Quote Mining

Modern geocentrists spend a large amount of effort quote mining—taking a quotation out of context to show that the writer believes something he or she does not in fact believe. Both of the geocentrist writings referenced in this article are primarily lists of quotations from famous scientists. Thus on page 12 of *Geocentrism 101*, the author quotes Stephen Hawking as saying, "So which is real, the Ptolemaic or the Copernican system? Although it is not uncommon for people to say that Copernicus proved Ptolemy wrong, that is not true. As in the case of our normal view versus that of the goldfish, one can use either picture as a model of the universe, for our observations of the heavens can be explained by assuming either the earth or the sun to be at rest" (Sungenis 2014). Sungenis uses this quote to show a famous scientist admitting that Earth could be at the center of the universe. But that's not what Hawking was saying at all; rather, he was making a point that there is no "one true model" of the universe.

Conspiracy Theory

At the first annual conference (it was the only annual conference) on geocentrism in November of 2010, the first talk was titled: "Geocentrism: They Know It But They're Hiding It." One of the major themes of modern geocentrism is that it is a conspiracy of physicists to hide the truth from humanity that the Earth is in the center of the universe. One hears this claim a great deal from pseudoscientists around the world. It might be a free energy machine that utility companies don't want known, or it might be the dangers of vaccinations that medical doctors and drug companies want hidden, or it might be the "fabrication" of the Moon landings that the government wants hidden. The reason that conspiracy theory is so prevalent in pseudoscience is there is always a pressing question: If this idea is so good, why don't physics professors, or medical doctors, or energy companies talk about it? The fig leaf used to cover this hole in the pseudoscience is conspiracy theory. Conspiracy theories are not only useful new garments for the emperor, they are also absolutely not demonstrable because they are secret and undocumented by definition.

Singlehandedly Overthrowing the Scientific Paradigm

The introduction to *Geocentrism 101* ends with these modest words: "The evidence you are about to see is so shocking and so revolutionary that once you grasp its significance your whole view of life will be instantly changed. Life itself, and the reason for our existence, will become crystal clear" (Sungenis 2014). Typically when scientists write a paper or a book, they purport to increase the knowledge of humanity by a little bit and to make a small contribution to the advancement of understanding. Typically when pseudoscientists write a paper or a book, they purport to completely change science as we know it. Thus an important way of telling science from pseudoscience is the level of modesty of the authors. Are they trying to stand on the shoulders of giants that have come before as Newton did? Or are they trying to overthrow science or technology or medicine as we know it?

Allergic to Math

In one of his most famous quotations, Galileo reminds us: "Philosophy is written in this grand book, the universe, which stands continually open to our gaze, but it cannot be understood unless one first learns to comprehend the language and interpret the characters in which it is written. It is written in the language of mathematics, and its characters are triangles, circles, and other geometrical figures, without which it is humanly impossible to understand a single word of it; without these, one is wandering around in a dark labyrinth" (Finocchiaro and Galileo 2008). Thus another way to tell good physical science from junk physical science is to see if there is a mathematical basis for the science. To make sense of theories in astrophysics, one must first receive some training in mathematics. Pseudoscientists on the other hand prefer to avoid math, typically because they lack any significant training in mathematics. Pseudoscientific tracts will often have a distinct dearth of mathematical equations or discussions. In my interactions with geocentrists, I have brought up the lack of math; their response was that scientists are trying to hide the truth behind all that math and that real physics can be understood without all the obfuscation of mathematics. I will let Galileo handle that one.

Conclusion

Pseudoscience remains popular in all areas of science, and there are many people who believe in at least one type of pseudoscience. I propose that ignoring pseudoscience is ineffective and only encourages it to spread. Instead, scientists and science educators ought to seize pseudoscience as an opportunity to teach about how science works and about what is wrong with pseudoscience. Let's not ignore pseudoscience such as modern geocentrism; rather, let's discuss it and use it to teach and educate people about how to tell the difference between real science and junk science. ■

References

Finocchiaro, Maurice A., and Galileo Galilei. 2008. *The Essential Galileo*. Indianapolis: Hackett Publishing Company.

Popper, Karl. 1963. Science as falsification. Online at http://www.stephenjaygould.org/ctrl/popper falsification.html.

Sungenis, Robert, and Robert Bennett. 2014. *Galileo Was Wrong, the Church Was Right, 10th Edition*. Catholic Apologetics International.

Sungenis, Robert. 2014. *Geocentrism 101*. Catholic Apologetics International.

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Flaw and Order: The Science and Mythology of Criminal Profiling

Somewhere between hard forensic science and Hollywood-cop psychobabble, criminal profiling struggles to find a legitimate place in law enforcement's investigative toolbox.

LAURENCE MILLER

Here's a common television drama scenario: a body has been discovered in a neighborhood, and it seems to match a pattern of previous homicides.

"Looks like a serial killer," mutters one beat cop to another. "Better call in [your favorite TV detective's name here]." Cue the somber yet wistfully hopeful music as the experienced criminal profiler enters the frame and scopes out the crime scene, analyzes the evidence, interviews witnesses, and ultimately develops a behavioral profile that leads to the killer's capture and conviction. Everybody has seen stories like this, but what is their basis in reality? Is criminal profiling a valid law enforcement tool or a fictional forensic fad?

Information from books, TV shows, movies, and the media's general fascination with the dark side of human behavior have all combined to produce an explosion of interest in the field of criminal profiling over the past decade (Douglas and Olshaker 1998; Ressler and Schactman 1992). In academia, too, a growing number of masters and doctoral programs are allowing students to do research and dissertations in this area (Dowden et al. 2007). Behavioral profiling research is being accepted for publication in many prominent psychology and criminal justice journals, and the field has spawned at least one periodical entirely devoted to this topic, the *Journal of Investigative Psychology and Offender Profiling*.

However, a number of forensic skeptics have expressed concern that the popularity and enthusiastic application of what variously has been termed *behavioral profiling*, *psychological profiling*, *offender profiling*, or *criminal profiling* have far exceeded the evidence for its scientific validity (Dowden et al. 2007; Hicks and Sales 2006; Kocsis 2009; McCann 1992; Muller 2000; Palermo and Kocsis 2005; Snook et al. 2007). This article provides a concise description of the practice of criminal profiling, addresses the questions of both its theoretical validity and practical utility, and makes some recommendations for how to rationally and usefully integrate the art and practice of criminal profiling into the fields of scientific psychology and criminal justice.

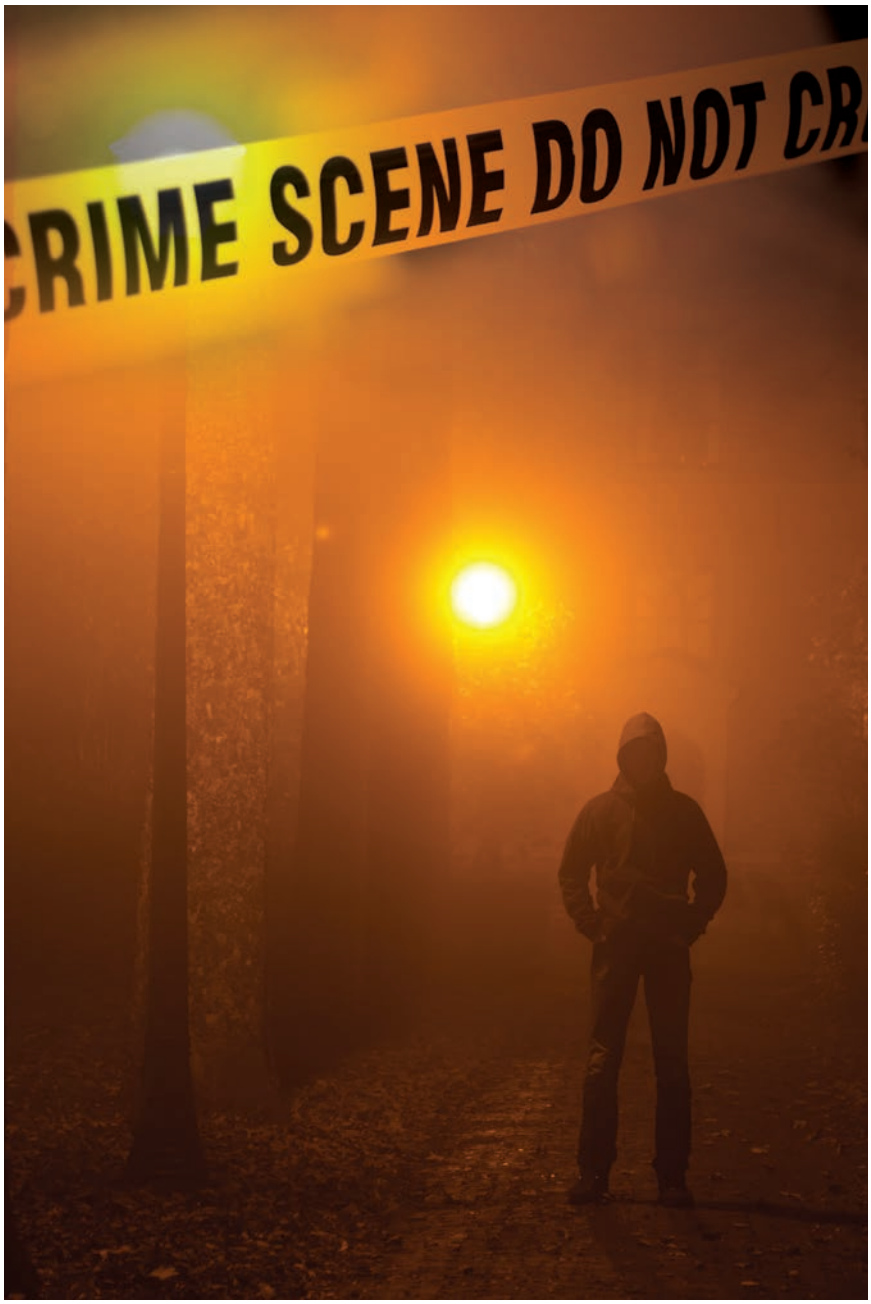
Criminal Profiling: What Is It?

All professionals who work with human beings, whether medical doctors, psychologists, business managers, or police detectives, do some kind of profiling in their daily work. Understanding both the commonalities and differences in human behavior enables these professionals to individually tailor their services to diverse types of people. Clinicians need to know how different patients will respond to different medical procedures or forms of psychotherapy. Law enforcement officers need to know how different suspects will behave under varying circumstances.

Although various terms and definitions have been proposed, the term *behavioral profiling* is generally understood to refer to "a technique for identifying the major personality and behavioral characteristics of an individual based upon an analysis of the crimes he or she has committed" (Douglas and Burgess 1986, 405). Thus, the basic idea is that certain personality types express themselves by the individualized way they commit a crime, and that analyzing the particular pattern can provide clues to the killer's identity.

While some form of profiling has always been a part of criminal investigation, efforts by the Federal Bureau

of Investigation to develop and implement a formal and systematic process for crime scene profiling began only as recently as 1978, with the formation of the FBI's *Behavioral Science Unit*, or BSU, which evolved into the *Profiling and Behavioral Assessment Unit* (Douglas and Burgess 1986; Geberth 1996; Homant and Kennedy 1998; Ressler et al. 1988). Initially, the process was developed specifically to deal with cases of serial homicide and serial rape. Although the official FBI term for this activity is *criminal investigative analysis*, the more colloquial term *criminal profiling* has become entrenched in both the academic and popular literature. With some slight differences in approach, profiling has also become popular in Canada, Great Britain, and the Netherlands (Dowden et al. 2007; Palermo and Kocsis 2005).



Despite the emphasis on psychology, however, profilers as a group have not articulated a uniform theory of human behavior that guides their investigations.

Despite the emphasis on psychology, however, profilers as a group have not articulated a uniform theory of human behavior that guides their investigations, and it is often unclear as to whether they are trying to reconstruct the personality of a given offender or merely generating a loosely connected series of psychologically descriptive statements concerning the interpersonal style and the underlying motives of the suspect.

Working the Case: How Profiles Are Developed

The FBI's model of criminal profiling typically follows a sequence of stages (Geberth 2006; Kocsis 2009).

Preliminary steps. The first officer who discovers the crime scene endeavors to preserve the scene and, if possible, to hold any witnesses or suspects for questioning. The on-scene officer initiates a log or timeline that accounts for all activities at the scene and the people and vehicles that have had access to the area. The on-scene officer then contacts the special investigator, or "profiler."

Initial procedures. The investigator first assesses the area as a whole to take in the "big picture"—neighborhood, roadways, pedestrian pathways—before focusing on the crime scene itself. In an initial survey, or "walk-through," of the scene, the investigator takes notes, photos, and videos for later processing and

ascertains whether there is any fragile or perishable evidence that needs to be collected and preserved right away.

Describing the scene. The investigator records a complete description of the victim and the surrounding area, including: age, sex, body type, skin and hair coloring, clothing or missing clothing, positioning and location of the body, obvious or unusual weapons in the vicinity, obvious signs of violence such as bullet holes, shell casings, blood stains, bottles, or syringes, evidence of premortem injury or postmortem mutilation, and any other evidence that could yield clues as to cause of death. At some point, physical evidence is collected from the crime scene, either by a special evidence collection team (in larger police agencies) or by the investigator him- or herself (in smaller departments).

An important aspect of on-scene homicide investigation is an analysis of *crime scene staging*, in which the offender manipulates the crime scene in an attempt to confuse or misdirect law enforcement investigators from the true cause of death or motive for the killing (Hazelwood and Napier 2004). Common scenarios include revenge homicides staged to look like suicides or accidents, domestic homicides staged to look like robberies, or sexual homicides staged to shock or taunt police and the media (Miller 2000; Miller 2012). In such cases, the investigator considers who would benefit from the scene being staged or what psychological gratification might be obtained by the perpetrator.

Forensic interviews. Any potential witnesses are interviewed at the scene to take advantage of their fresh observations and recollections. Some witnesses may be transported to the department for further questioning. Follow-up interviews may be scheduled at later dates as more evidence comes in.

Victimology. A thorough understanding of who the victim is, where he or she lived and worked, his or her background, and social relationships are often viewed by profilers as a vital first step in ascertaining why he or she was victimized, who the killer was, and what may be his or her preferred type of victim (Joyce 2006; Napier and Hazelwood 2003). Types of victim information include injuries sustained (methodical execution or violently rageful attack?), location of the victim (what was he or she doing away from work in the middle of the afternoon?), victim's occupation (what type of people would he or she likely run into?), family and friends (recent romantic breakup or harassment by creepy neighbor or workmate?), and legal history (clean-cut preppie found in "druggie" neighborhood?).

This information is combined to develop the *victim profile*, which in turn is supposed to yield clues to the offender's *modus operandi*, or MO, that is, his or her particular and individualized methodology of committing crimes (this is distinguished from the *signature*, which reflects the offender's deliberate manipulation of the crime scene).

Developing the offender profile. When all this data has been collected, the FBI's Crime Scene Analysis consists of six steps: (1) inputting the profiling data; (2) developing decision process models to discern patterns and commonalities; (3) reconstructing the crime scenario, i.e., exactly how the suspect killed the victim; (4) construction of a criminal profile that incorporates the motives, physical qualities, personality, and behavioral tendencies of the perpetrator; (5) targeted investigation of a narrowed pool of suspects who fit the profile and use of the profile in interviewing and interrogating likely suspects; and (6) apprehension of the offender. This process strives to be a cyclical and flexible one, so that the profile may be modified as new information comes in from the ensuing investigations.

Note that the overall rationale of the FBI's criminal profiling approach is not to identify airtight, idiosyncratic markers that can zero in on a single specific perpetrator but to develop a suite of identifying characteristics that can be compared to other offenders already in the database. If the suspect is previously unknown to law enforcement, there will be nothing to compare the profile with. The preternatural discernment and apprehension of a previously unknown suspect living down the street is something that happens in Hollywood, not in real-life law enforcement.

But Does It Work? Evidence for the Validity and Usefulness of Criminal Profiling

Even within the limits described, there are quite a number of cases where

criminal profiles have proven to be inaccurate, unhelpful, or frankly misleading in solving crimes (Muller 2000; Rossmo 2009; Snook et al. 2007). This has led the pendulum of opinion to swing in the other direction, with some critics asserting that behavioral profiling is little better than astrology (Ainsworth 2001), while others take a more middle ground position in the debate over whether behavioral profiling is mainly a highly skilled art (Douglas and Burgess 1986; Turvey 1999) or should aspire to be a replicable, scientific technique (Canter 2004; Kocsis 2009; Palermo and Kocsis 2005)—in essence, the same debate that surrounds almost every area of applied psychology, including forensic psychology (Miller 2006; Miller 2012).

One problem is that most research and writing on psychological profiling has not been done by psychologists but by law enforcement investigators, who tend to take an intuitive case-study approach rather than a skeptical scientific orientation toward their subject (Dowden et al. 2007). Over the past two decades, a number of forensic psychologists have attempted to examine the empirical basis for criminal behavioral profiling.

Law enforcement investigators and profiling. In an early study, Anthony Pinizzotto (1984) surveyed local law enforcement officers who had asked the FBI's BSU to develop a total of 196 offender profiles to assist in their investigations. Most of the officers reported that the profiles were of some use in focusing their investigation, but less than half considered the profiles to be significantly helpful in solving their cases, and in only 17 percent of cases did the profiles lead to the actual identification of a suspect.

A subsequent study (Pinizzotto and Finkel 1990) presented a previously solved murder case and rape case, in which the outcome was already known, to five different groups: (1) "expert profilers" (i.e., instructors in the FBI's BSU); (2) "trained profilers" (i.e., law enforcement investigators who had undergone training from the BSU); (3) police detectives with no formal training in profiling; (4) psychologists; and (5) university students. The expert and trained profilers wrote longer and more detailed offender profiles, and their profiles were ranked higher in overall usefulness by an independent panel of detectives. However, the profiles of the expert and trained profilers were actually the *least* useful in predicting the actual characteristics of the murderer, although they did somewhat better than the other groups in predicting the rapist's characteristics.

I think the term *profiling* has accreted an unfortunate burden of prejudice, as it has been used pejoratively to describe unwarranted stigmatization of certain demographic groups, and this attribution may be unfairly tainting the term in other contexts as well.

Psychologists and profiling. What do psychologists think about psychological profiling? Curt Bartol (1996) found that 70 percent of a large sample of self-identified police psychologists seriously questioned the validity and usefulness of criminal profiling. However, in another study (Torres et al. 2006), simply changing the nomenclature from *criminal profiling* to *criminal investigative analysis* yielded a sharp increase in perceived scientific validity among surveyed psychologists. Although the authors did not address this, I think the term *profiling* has accreted an unfortunate burden of prejudice, as it has been used pejoratively to describe unwarranted stigmatization of certain demographic groups, and this attribution may be unfairly tainting the term in other contexts as well.

Whatever the name, even if psychologists could overcome their skepticism, might their unique training and knowledge about the human mind confer some advantage in creating a profile? Richard Kocsis and colleagues (2000) directly compared the profiling skills of psychologists to that of police officers and found that the only significant differences were that psychologists more accurately predicted the offender's physical features and offense behaviors. In fairness, however, should psychologists who don't specialize in forensic analysis be expected to have any special skills in that area based on their general knowledge of human behavior? For that matter, should police officers who are not trained profilers be assumed to have such specialized abilities just by virtue of working in a law enforcement field?

Craig Bennell and colleagues (2006) mince no words in categorically rejecting the idea that psychologists have any special insight into the criminal mind or any special skills with regard to criminal profiling. They point out that in other forensic contexts, such as psychological evaluations for the courts, psychologists typically show marked disagreement with one another and specialized training seems to have no appreciable effect on the accuracy or usefulness of their reports.

This, however, may be generalizing from a few sensationalized "battles of the experts" that receive glaring media attention and that are dramatized on TV cop-and-lawyer shows. In my experience as a forensic examiner, if provided with sufficient background data and a comprehensive clinical interview, it is rare for truly honest and objective evaluators to come up with diametrically opposed conclusions in forensic evaluations. Examiners may disagree on the precise diagnosis (schizophrenia vs. schizoaffective or bipolar disorder) or the exact relationship of the clinical criteria to the legal standard (subject was paranoid at the time of the offense

but was able to control his actions vs. subject was powerless to disobey command hallucinations).

However, most evaluations of the same subject will yield a rough consensus because the examiners are using well-validated principles of psychological investigation combined with their own knowledge and experience to produce a credible assessment. The same probably applies to skilled criminal profilers: of course they're not *always* right, and different profilers may disagree on assorted details, but it would be surprising if, given the same data and using the same methods, they came up with widely diverging profiles, especially on a consistent basis.

Criminal behavioral profiling will no doubt ultimately be found to occupy a middle ground somewhere between infallibility and psychobabble.

Criminal Profiling: Where Are We?

At present, the evidence for the overall validity of criminal profiles in solving serial homicides and other crimes appears weaker than at first suggested by the initial flush of enthusiasm. Probably, this represents expectable growing pains in the maturation of any behavioral science, and criminal behavioral profiling will no doubt ultimately be found to occupy a middle ground somewhere between infallibility and psychobabble. In the meantime, practitioners out in the real world must competently, ethically, and carefully use the available skills and tools, psychological and technological, to try to solve actual cases (Godwin 2001; Kocsis 2010).

Certainly, in the investigation of crimes of all types, psychological profiling should never be relied on to the exclusion of traditional evidence collection and analysis, and it should be regarded as one piece of the puzzle that can occasionally yield useful information. Again, the tension between art and science in all fields of applied human behavior, especially in forensic psychology, is one that must be dealt with forthrightly if our professional credibility is to be maintained (Miller 2006; Miller 2012). ■

References

Ainsworth, P.B. 2001. *Offender Profiling and Crime Analysis.* Devon: Willan Publishing.

Bartol, C.R. 1996. Police psychology: Then, now, and beyond. *Criminal Justice and Behavior* 23: 70–89.

Bennell, C., N.J. Jones, P.J. Taylor, et al. 2006. Validities and abilities in criminal profiling: A critique of the studies conducted by Richard Kocsis and his colleagues. *International Journal of Offender Therapy and Comparative Criminology* 50: 344–360.

Canter, D.V. 2004. Offender profiling and investigative psychology. *Journal of Investigative Psychology and Offender Profiling* 1: 1–15.

Douglas, J.E., and A.W. Burgess. 1986. Criminal profiling: A viable investigative tool against violent crime. *FBI Law Enforcement Bulletin* 55: 9–13.

Douglas, J.E., and M. Olshaker. 1998. *Mindhunter: Inside the FBI's Elite Serial Crime Unit.* New York: Scribner.

Dowden, C., C. Bennell, and S. Bloomfield. 2007. Advances in offender profiling: A systematic review of the profiling literature published over the past three decades. *Journal of Police and Criminal Psychology* 22: 44–56.

Geberth, V.J. 1996. *Practical Homicide Investigation. Tactics, Procedures, and Forensic Techniques* 3rd ed. Boca Raton, FL: CRC Press.

———. 2006. Preliminary death investigation. *FBI Law Enforcement Bulletin* September: 131–140.

Godwin, G.M. 2001. *Criminal Psychology and Forensic Technology: A Collaborative Approach to Effective Profiling.* Boca Raton, FL: CRC Press.

Hazelwood, R.R., and M.R. Napier. 2004. Crime scene staging and its detection. *International Journal of Offender Therapy and Comparative Criminology* 48: 744–759.

Hicks, S.J., and B.D. Sales. 2006. *Criminal Profiling: Developing an Effective Science and Practice.* Washington, DC: American Psychological Association.

Homant, R.J., and D.B. Kennedy. 1998. Psychological aspects of crime scene profiling. *Criminal Justice and Behavior* 25: 319–343.

Joyce, T. 2006. Victimology awareness. *Law and Order* March: 48–54.

Kocsis, R.N. 2009. *Applied Criminal Psychology: A Guide to Forensic Behavioral Sciences.* Springfield, IL: Charles C Thomas.

———. 2010. Criminal profiling works and everyone agrees. *Journal of Forensic Psychology Practice* 10: 224–237.

Kocsis, R.N., H.J. Irwin, A.F. Hayes, et al. 2000. Expertise in psychological profiling: A comparative assessment. *Journal of Interpersonal Violence* 15: 311–331.

McCann, J.T. 1992. Criminal personality profiling in the investigation of violent crime: Recent advances and future directions. *Behavioral Sciences and the Law* 10: 475–481.

Miller, L. 2000. The predator's brain: Neuropsychodynamics of serial killers. In L.B. Schlesinger Ed., *Serial Offenders: Current Thought, Recent Findings, Unusual Syndromes.* Boca Raton, FL: CRC Press, pp. 135–166.

———. 2006. *Practical Police Psychology: Stress Management and Crisis Intervention for Law Enforcement.* Springfield, IL: Charles C Thomas.

———. 2012. *Criminal Psychology: Nature, Nurture, Culture.* Springfield, IL: Charles C Thomas.

Muller, D.A. 2000. Criminal profiling: Real science or just wishful thinking? *Homicide Studies* 4: 234–264.

Napier, M.R., and R.R. Hazelwood. 2003. Homicide investigation: The significance of victimology. *National Academy Associate* 5: 14–15, 21–22, 30–32.

Palermo, G.B, and R.N. Kocsis. 2005. *Offender Profiling: An Introduction to the Sociopsychological Analysis of Violent Crime.* Springfield, IL: Charles C Thomas.

Pinizzotto, A.J. 1984. Forensic psychology: Criminal personality profiling. *Journal of Police Science and Administration* 12: 32–40.

Pinizzotto, A.J., and N.J. Finkel. 1990. Criminal personality profiling: An outcome and process study. *Law and Human Behavior* 14: 215–233.

Ressler, R.K., A.W. Burgess, and J.E. Douglas. 1988. *Sexual Homicide: Patterns and Motives.* New York: Lexington Books.

Ressler, R.K., and T. Schactman. 1992. *Whoever Fights Monsters: My Twenty Years Tracking Serial Killers for the FBI.* New York: Simon & Schuster.

Rossmo, D.K. 2009. *Criminal Investigative Failures.* Boca Raton, FL: CRC Press.

Snook, B., J. Eastwood, P. Gendreau, et al. 2007. Taking stock of criminal profiling: A narrative review and meta-analysis. *Criminal Justice and Behavior* 34: 437–453.

Torres, A.N., M.T. Boccanccini, and H. Miller. 2006. Perceptions of the validity and utility of criminal profiling among forensic psychologists and psychiatrists. *Professional Psychology: Research and Practice* 37: 51–58.

Turvey, B.E. 1999. *Criminal Profiling: An Introduction to Behavioral Evidence Analysis.* New York: Academic Press.

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Bigfoot or Big Fraud?

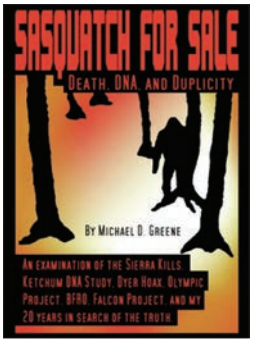
ROB BOSTON

The evidence for Bigfoot boils down to a few seconds of film shot nearly fifty years ago, large footprints that pop up here and there, hair and DNA that always turn out to be from known animals, and eyewitness sightings. In short, the evidence isn't very good. Yet belief in Bigfoot persists. Why?

In his new book, *Sasquatch for Sale: Death, DNA, and Duplicity*, Michael Greene provides a couple of answers useful to skeptics without at all meaning to: There's a lot of deliberate hoaxing going on, and some people are simply gullible.

Greene lived in New Jersey most of his life, but residing in that famously turnpiked state didn't stop him from catching Sasquatch fever. His book is essentially a memoir of his experiences hunting for the big hairy guy. Although at times entertaining—Greene's tale of his first Bigfoot hunt where he was accompanied by a drug addict who had no experience camping provides some chuckles—the volume is mostly a maddening affair. Time after time, episode after episode, Greene latches onto someone who seems to be on the verge of making the big score. Then the story falls apart, and no Bigfoot is delivered. A steady diet of this would lead most reasonable observers to conclude that the sought-after man-ape of the woods simply doesn't exist. Not Greene. He just moves on to the next thing.

Part of the reason Greene wants so badly to believe is that he claims to have seen Bigfoot himself. He supposedly lured one to his campsite in North Carolina with a Zagnut candy bar, of all things, and captured its image with a thermal-imaging camera.


SASQUATCH FOR SALE
DEATH, DNA, AND DUPLICITY
BY MICHAEL D. GREENE
AN EXAMINATION OF THE SIERRA KILLS KETCHUM DNA STUDY, DYER HOAX, OLYMPIC PROJECT, BFRO, FALCON PROJECT, AND MY 20 YEARS IN SEARCH OF THE TRUTH

Sasquatch for Sale: Death, DNA, and Duplicity. By Michael Greene. *CreateSpace, 2014. ISBN: 978-1499734508. 390 pp. Softcover, $14.48; ebook, $7.00.*

Greene makes much of his video and compares it to the famous Patterson-Gimlin film of 1967, which, believers will tell you, shows a large female Sasquatch loping through the woods of northern California. This clip remains the best evidence for the creature to date. Say of the film what you will, but it does not depict a rock formation, a cut-out figure, or a conventional animal. The film shows either a Sasquatch or someone in a Sasquatch suit. Greene's candy bar-stealer, by contrast, is yet another "blobsquatch." Such films proliferate on the Internet these days. They aren't helpful.

There are some stories Bigfoot boosters should stop telling, and Greene tells a few of them here. A famous piece of Bigfoot lore concerns Albert Ostman, a man who claimed that in 1924, he was abducted by a Sasquatch in British Columbia and held captive by a Bigfoot family for several days. Ostman got the feeling he was being sized up as a husband for the Sasquatch daughter.

Several people have pointed out problems with the story. Ostman didn't tell it until thirty years after it supposedly happened, and the weird sexual subtext—"I (almost) married Bigfoot"—is fit for tabloids. More to the point, a family of large creatures would not have had enough food sources in the area where Ostman says they took him. Nevertheless, Greene swallows the outlandish tale.

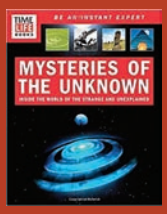
The Patterson-Gimlin film shows either a Sasquatch or someone in a Sasquatch suit.

Similarly, he buys into a bizarre story peddled by Justin Smeja, a California man who claims that he shot two Sasquatches, an adult and a juvenile, while hunting with a friend in the Sierra Mountains in 2010. The young Sasquatch didn't weigh much, but Smeja and his pal didn't bother to bring the body back to civilization. They just tossed it in some brush.

[NEW AND NOTABLE

Listing does not preclude future review.

AMERICAN CONSPIRACY THEORIES. Joseph Uscinski and Joseph Parent. This book—the first to systematically evaluate over a century of specifically American conspiracy theories—examines conspiracies from many angles. Divided into seven chapters (such as "Where Our Facts Come From" and "Who Are the Conspiracy Theorists?"), the book is rife with charts, graphs, and figures illustrating how and why conspiracies are formed and perpetuated. The authors, both at the University of Miami, offer interesting and surprising insights into the conspiracy phenomenon (offering evidence, for example, that American conspiracy theories peaked in the 1890s and the 1950s—not today as might be expected). A useful and important book on the psychology and sociology of American conspiracies. Oxford University Press, 2014, 221 pp., $29.95.



MYSTERIES OF THE UNKNOWN: Inside the World of the Strange and Unexplained. The editors of Time-Life Books explore the universe's bizarre "mysteries" in attractive, color-illustrated format. They start with psychics and mediums, proceed to telekinesis and ESP, then on to the litany of other subjects familiar to SI readers. With lots of photos and most topics treated in two-page spreads, the book is appealing and readable, but to the scientific skeptic ultimately disappointing in that it could have been so much better. The problem of course is the editors' determination to appeal to the widest possible audience (they say the book "does not attempt to settle arguments or draw definitive conclusions"), and that means downplaying the hundreds of critical examinations scientific skeptics have carried out. You can find the skepticism in here, in small portions, but not enough to turn naive readers off—or really well inform them. Time-Life Books, 2014, 266 pp., $17.95.

REALITY MINING: Using Big Data to Engineer a Better World. Nathan Eagle and Kate Greene. A well-considered antidote to knee-jerk concerns over Big Brother and the perils of modern surveillance society, *Reality Mining* argues that the threat of Big Data to our privacy and happiness has been overstated. While there are legitimate concerns about vast

Remarkably, adults (some with advanced degrees) accepted the story and actually traveled to the kill site with Smeja months later to see if they could locate remains. They managed to find a piece of flesh and submitted it for DNA testing. It turned out to be from a bear. Someone then got the bright idea to test Smeja's boots, which were said to be covered with Bigfoot blood. The results indicated known animals.

Why would anyone believe this fantastic yarn? Greene is impressed that Smeja passed a lie-detector test. Not much information is given about the test, but we do know one thing: Polygraphs are not admissible in court, and there is a reason for that.

As Greene notes, the Bigfoot community has lately been plagued with hoaxes. A few years ago, two Georgia men tossed a furry costume and some chitterlings in a box and presto! It's Bigfoot. Later, a stuffed Bigfoot body surfaced. It turned out to be a prop.

Despite these fakes, Bigfoot remains big business. These days you can hold yourself out as a Bigfoot hunter and be awarded with a reality TV show. Fame and money follow. Or you can, as Smeja did, produce a DVD to sell and land appearances at Bigfoot conventions. It beats working a low-wage, nine-to-five job.

Money motivates, and the cash is out there. Greene writes about an especially unskeptical millionaire who seems eager to lavish huge sums on Bigfoot hunters. He talks of seeing boxes of fancy night scopes, game cameras, thermal-imaging devices, etc., all funded with this man's largesse. Reading about it made me kind of sad. The money this fellow has blown on futile monster hunts could have helped a lot of people. (Greene himself has spent quite a lot of cash on this quest. He is forever buying a boat or a fancy piece of equipment to help land the unknown hominid.)

If you are interested in getting insider dirt on some of the controversial personalities in the Bigfoot community, you may find *Sasquatch for Sale* worth a read. Greene is no fan of Matt Moneymaker, founder of the Bigfoot Field Researchers Organization and now a reality TV star. He and Moneymaker were once friends, but in this book Greene speaks frankly of his disappointment with the man.

The gossip won't be enough to carry most readers through this windy tome. There were times when I felt guilty that I had spent seven dollars on it. Sometimes, you can only wince over the author's credulity. I'll admit I had to wonder if he really believes this stuff or if he just enjoys spinning tales.

There are other problems with the book: For example, the author should have omitted his extreme Right-wing opinions from the text. This is a book about Bigfoot, not a Tea Party manifesto. Also the book, like many self-published works, could have benefited from an editor and a proofreader.

Finally, Greene's tendency to drone on about gear gets tiresome. He's a fan of high-tech gadgets and seems to believe these devices will help him prove the existence of Bigfoot—even though so far (other than his video of a prancing white blob) they have brought him zilch.

Perhaps it's time for Greene and his fellow Sasquatch enthusiasts to leave behind the gadgets the next time they charge into the woods. Instead, they should pick up a low-tech item, one they desperately need: We call it Occam's razor. ■

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Historical Revisionism in *Tim's Vermeer*

EVE SIEBERT

***Tim's Vermeer*. Dir. Raymond Teller. Prod. Penn Jillette. Written by Penn and Teller.** Featuring Tim Jenison, Penn Jillette, Martin Mull, David Hockney, Philip Steadman, and Colin Blakemore. Sony Pictures Classics, in association with High Delft Pictures, 2013.

Penn and Teller's film *Tim's Vermeer* follows inventor and non-painter Tim Jenison as he attempts to recreate Johannes Vermeer's classic seventeenth-century painting *The Music Lesson* by using an ingenious optical device. Jenison's project was years in the making, even before he placed the first brushstroke on his canvas. Jenison was inspired by the works of artist David Hockney and Philip Steadman, emeritus professor of urban studies and built form studies at University College London. In his 2001 book *Secret Knowledge: Rediscovering the Lost Techniques of the Old Masters*, Hockney argued that, beginning in the late Middle Ages and the Renaissance, artists began using optical devices such as the camera obscura to achieve realistic effects. In the same year, Steadman published *Vermeer's Camera: Uncovering the Truth behind the Masterpieces*. In it he presented a detailed argument that Vermeer had used a camera obscura in his paintings.

Building on both Hockney's and Steadman's theories, Jenison postulated that Vermeer could have used a mirror along with the camera obscura to achieve impressively accurate effects of lighting and color, even if he didn't have extensive training as a painter. To test his theory, Jenison decided to recreate *The Music Lesson* using an optical device, natural light, and only materials that would have been available to Vermeer. In order to do so, he had to mix his own paints, prepare his own lenses, and recreate the room in which Vermeer worked. It took him 213 working days just to prepare the room and its fittings.

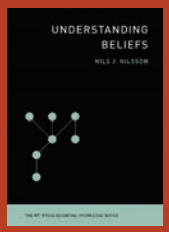
The film is beautiful and fascinating. As director, Teller manages to make even the grinding tedium of the painstaking painting process interesting. Like Jenison's version of *The Music Lesson*, Penn and Teller's film is a remarkable achievement. The audience becomes caught up in Jenison's journey: we want him to succeed.

The film also makes a rhetorically and emotionally compelling argument that Vermeer may have used a device similar to Jenison's. That claim, however, is problematic because much of the reasoning presented in the film resembles that of proponents of pseudoscientific fringe theories.

The film emphasizes Vermeer's uniqueness. In his narration, Jillette says "When you look at a Vermeer,

amounts of personal data in the wrong hands, the authors argue that the data collection and analysis can be used for a variety of beneficial purposes, including public health, environmentalism, and a better world. The book is a bit stilted and clearly shows its origins as a fleshed-out thesis outline, but it offers an interesting look at the issues we will face in the future as more and more data is collected. The MIT Press, 2014, 208 pp., $24.95.

A STORM OF WITCHCRAFT: The Salem Trials and the American Experience. Emerson Baker. There is no shortage of books—excellent, bad, and in between—about the Salem Witch Trials; it is one of the most-studied and best-documented episodes in American history. The breadth of material can be daunting, and Baker, a professor of history at Salem State University, provides a welcome and comprehensive overview of the trials, including oft-neglected discussions of their aftermath and context. With extensive notes, an exhaustive index, and appendices listing those accused of witchcraft in court records from 1692–1693, this book is a welcome addition to the literature about this dark era. Oxford University Press, 2014, 416 pp., $29.95.



UNDERSTANDING BELIEFS. Nils J. Nilsson. The latest in a series of concise, pocket-sized books on topics of current interest, this one is a thoughtful, scholarly (but very readable) discussion of how we form our beliefs about beliefs. In nine chapters, the author (a Stanford professor of engineering, emeritus) clearly discusses: Beliefs, Knowledge, and Models; What Do Beliefs Do for Us? Where Do Beliefs Come From? Evaluating Beliefs; In All Probability; Reality and Truth; The Scientific Method; Robot Beliefs; and Belief Traps. In the author's view, the chapters on evaluating beliefs and on the scientific method offer "the most helpful way to evaluate beliefs of all kinds." MIT Press Essential Knowledge Series, 2014, 151 pp., $12.95.

—Kendrick Frazier and Benjamin Radford

it seems like more than paint on canvas. It seems to glow like an image on a movie screen. That magical quality has mystified the world for 350 years. How did Vermeer do it?" While Vermeer's depiction of light is certainly impressive and has provoked interest and debate from art historians, Jillette's statement comes perilously close to assertions such as "experts are baffled" that often accompany fringe claims.

Later in the film, Jillette says, ". . . you don't need a trained eye to see that Vermeer's [paintings] look different from his contemporaries'." Two paintings are used to illustrate this point: Vermeer's *Woman Holding a Balance* (c. 1665) and Pieter de Hooch's *Woman Weighing Gold* (c. 1664). Superficially, the two paintings look quite different: de Hooch's is much darker, largely because the background wall is a dark yellow-gold. However, in other ways, the two paintings are very similar. They both depict the same domestic scene. In both, a woman facing a window holds a scale in her right hand. Many of de Hooch's other paintings, such as *A Boy Bringing Bread* (c. 1663) or *Woman Peeling Apples* (c. 1663) are brighter and more closely resemble Vermeer's style. The film's comparison is misleading and suggests that there is a greater gulf between Vermeer and his contemporaries than actually exists.

The film uses an even more misleading comparison to bolster Hockney's argument that, by Vermeer's time, radical advances in painting had occurred that cannot easily be explained without attributing them to technology. Jillette says, "Hockney wrote that when paintings started to look less like this and more like this, that was because artists had found new tools to help them." The second "this" refers to Vermeer's *The Milkmaid*, painted c. 1658. The first "this" is a calendar miniature from a psalter. Illustrating the labors of December, the miniature shows a man slaughtering a pig in the upper half of the page and singeing off its bristles in the lower half (The Hague, National Library of the Netherlands, KB 76, F 13, fol. 12). The psalter was painted c. 1180, roughly 500 years before Vermeer's painting. Of course great advances in artistic technique occurred in the intervening half millennium. Even by eleventh-century standards, the psalter's illustrations are not particularly sophisticated. In between the psalter and Vermeer come the fantastic miniatures by the Limbourg brothers in the *Très Riches Heures du Duc de Berry* (1412–1416), not to mention Giotto, Jan van Eyck, Leonardo da Vinci, Michelangelo, Caravaggio, and Rembrandt. While it may be true, as Hockney claims, that some of these artists used optical devices, it's clear that the evolution of artistic technique was much more gradual than the film's risible visual comparison suggests.

Not only does the film suggest that Vermeer was unique and incomprehensibly gifted, it implies that he may not have had any significant training to account for his gifts. Jillette notes that, while "Dutch artists typically learned by apprenticeship, and they kept written records to prove their training," there is no record of Vermeer ever having been apprenticed to an artist. The implication is that Vermeer received no training. Jenison says something similar: "It's possible Vermeer was using technology to make these beautiful paintings. If he did that . . . it's possible he could paint some pretty remarkable pictures without a lot of training." The suggestion that Vermeer may have been untrained because there is no record of his apprenticeship is an argument from ignorance. It resembles arguments made by those who believe Shakespeare did not write the works attributed to him: no school records survive, and he didn't mention his plays or any books in his will; therefore, he was an illiterate who never attended school and owned no books. It's possible that Vermeer never entered into a formal apprenticeship, but we can't assume that based on missing documents from 350 years

The suggestion that Vermeer may have been untrained because there is no record of his apprenticeship is an argument from ignorance.

ago. Even if there was no formal apprenticeship, Vermeer's father became an art dealer before Vermeer was born. Vermeer took over the business when his father died. He would have been in contact with painters all his life and could easily have received training from one or more of his father's clients.

The film evinces quite a different attitude toward missing evidence when that lack does not support its argument: there is no direct evidence that Vermeer used optics. Jenison himself candidly acknowledges this several times and expresses a wish that such documentary evidence might be found. Hockney, however, vigorously asserts that such lack of evidence is to be expected: ". . . you'll never find a letter like that. They never wrote down . . . van Eyck would not write down the formulas for the paint for the simple reason that someone might read them. And there were other people that wouldn't write 'em down. People were sworn to secrecy, oaths that they took very seriously. You won't, you never . . . it's naïve to think you'll find something." This is not just special pleading. It is conspiricist thinking: there's no evidence because it's all a huge secret.

Unfortunately for Hockney, there is some documentary evidence that suggests that Vermeer did *not* routinely use optics. A detailed inventory of Vermeer's estate compiled after his death lists easels and palettes but no lenses or other optic devices. Furthermore, Vermeer's *The Art of Painting* shows an artist painting a young woman who is standing by a window. The location appears to be the same room depicted in *The Music Lesson* and many other Vermeer paintings. The artist portrayed may very well be Vermeer himself. The painter is sitting in front of an easel with no camera obscura, lens, or mirror in sight.

Another problem with the film is that it features "experts" who are not experts in relevant fields. Although Hockney and Steadman are the most prominent proponents of the theory that some artists used the camera obscura, neither is an art historian specializing in seventeenth-century Dutch painting. As an artist, Hockney has an interesting perspective on the artistic process, but he is not a historian. Steadman specializes in modern architecture and urban planning. In fact both Hockney and Steadman seem to hold art historians in contempt. Steadman says they reacted to his book with "a lot of upset" and "really deep anguish" at the "intrusion of amateurs and crass rationalists into the preserves of art history" and at the perceived notion that Vermeer was somehow cheating by using optics. Hockney agrees that art historians dismiss optics as "cheating" and calls the reaction "childish, absolutely childish." To a lesser extent, Jenison also joins in the strawman argument built against art historians, characterizing their attitude by saying: "So the only legitimate way to make a painting is to just walk up to the canvas and *alla prima* paint it." For good measure, he adds an argument from incredulity: "I can't comprehend that someone could paint that from their imagination."

According to *Tim's Vermeer*, art historians who specialize in seventeenth-century Dutch painting are overemotional, childish, and have no rational response to Hockney's and Steadman's arguments. Essentially, they are accusing the experts of being narrow-minded representatives of "Big Vermeer." It's not even true that the reaction to Hockney's and Steadman's hypotheses has been entirely negative. Most art historians agree that Vermeer was at least inspired by the camera obscura, and some believe he actively used it in his painting.

One argument against Vermeer's habitual use of optics is implicit in Steadman's statement that Vermeer used either optics or geometry. Steadman himself presents this as a dichotomy. His point is to show how foolish it is to argue that optics are cheating because, by the same token, geometry should also be cheating: ". . . these are very accurate measured perspectives. So there are two ways you can do them: you can produce them optically, or you can set them up geometrically. If you set them up geometrically, you're using the standard methods: it's a machine; it's an algorithm; you apply the rules. Why is that not cheating?" If he's correct that it is an either/or situation, he runs into a problem because *The Music Lesson*, *The Girl with a Pearl Earring*, and many of Vermeer's other works have visible pinpricks in the canvas marking the vanishing point, suggesting that he used geometry.

Tim's Vermeer is a film about Tim Jenison and his fantastic, insane, and ultimately successful quest to create a reasonable facsimile of *The Music Lesson*. It is not meant to be a debate. However, both explicitly and implicitly it makes the argument that Vermeer very likely did use a device similar to the one Jenison devised. Emotionally, rhetorically, and visually that argument is brilliantly compelling, but the actual reasoning is weak. In an onscreen interview, Jillette says, "Philip Steadman, David Hockney, to my mind, to the mind of the skeptic, prove that Vermeer used some sort of device," and the film suggests that Jenison's experiment has documented what that device was and how it worked. But while we may admire Jenison's work and the film's narrative, we should not accept its argument at face value. As skeptics, we should always question and look for other perspectives. ■

References

Liedke, W.A., M.C. Plomp, and A. Rüger. 2001. *Vermeer and the Delft School*. New York: Metropolitan Museum of Art. Online at http://www.metmuseum.org/research/metpublications/Vermeer_and_the_Delft_School.

Vermeer: Master of Light. 2001. Dir. Joe Krakora. Narr. Meryl Streep. National Gallery of Art. Online at https://www.youtube.com/watch?v=DEior-0inxU&feature=kp.

Eve Siebert wrote about creationist interpretations of *Beowulf* in the January/February 2013 Skeptical Inquirer.

Skeptical Inquirer
ANN DRUYAN ON THE WONDERS OF
COSMOS
The Runaway Toyota Panic: Threat or Hysteria?
The Rhetoric of Extraordinary Claims
An Introduction to Homeopathy
SPECIAL REPORT:
TV's Mystery Mongering 'Killer Yeti'

Cosmos Problematic?

Ann Druyan may be right that the new *Cosmos* was criticized by only a "tiny and feeble minority" of "voices that reject science" ("Ann Druyan on the Wonder of Cosmos," Interview, September/October 2014); but it is probably because, in a world of hundreds of TV channels, it had nothing like the cultural impact of Carl Sagan's inimitable original.

Nor did it deserve to. Neil DeGrasse Tyson's bland narration could not match Sagan's passion and eloquence, any more than its cartoons could equal the original's live-action re-creations. The content was also problematic. Was it wise, for example, to spend an hour on a tendentious account of *leaded gasoline*?

Taras Wolansky
Kerhonkson, New York

Runaway Toyota Hysterias

I have long admired Michael Fumento's work, and I was delighted to start reading "Runaway Hysteria." However, the sidebar on p. 43 ("Single-Spark U.S. Mass Hysterias of Our Generation") contains a number of errors.

The first example in the sidebar begins: "On Halloween night 1974, an Illinois man [killed his son with poisoned] Pixy Stix. . . . Trick or treating was forever changed in the U.S." The poisoned Pixy Stix case occurred in Texas, not Illinois. But concern about Halloween sadism was already well-established by 1974. For example, a 1970 piece in the *New York Times* warned: "That plump red apple that Junior gets from a kindly old woman down the block . . . may have a razor blade hidden inside." My research found newspaper reports of contaminated treats every year dating back to 1962; the first death attributed to Halloween sadism was in 1970 (the case was heavily publicized, although later investigation concluded that the heroin that poisoned the child did not come from a Halloween treat). In all likelihood, it was the widespread knowledge of these stories that led Ronald O'Bryan to believe he could get away with poisoning his son.

The second example states that Adam Walsh's 1981 murder "set off the missing children scare." Again, concern about missing children had been mounting for several years. The disappearance of Etan Patz—another heavily publicized case—occurred in 1979. Stephen Stayner—held by his kidnapper for seven years, escaped in 1980. There had been an organized campaign—including several Congressional hearings—to address various issues related to missing children beginning in the early 1970s.

I am less qualified to assess the remaining four items, but the point should be clear. Claims about "single-spark mass hysterias" also deserve skeptical inquiry.

Joel Best
Professor of Sociology &
Criminal Justice
University of Delaware

Michael Fumento replies to Best:

Any admiration Dr. Best may have is mutual. And I stand corrected on the location of the Halloween homicide in question. But with all of these examples, you can always find some sort of precedent or precursor. Depending on your neighborhood, I'm sure there was always some level of angst if the kids went out alone. But as an article in the Houston Chronicle *(http://www.chron.com/news/houston-texas/article/Man-Who-Killed-Halloween-still-haunts-holiday-1971811.php) put it, "Halloween has lived on. But not the way it was. The case horrified parents and helped usher in an era in which carefree costumed trick-or-treating has given way to X-rayed candy bags and tightly controlled Halloween parties and festivals."*

It continues, "The decades-old idea that depraved strangers are targeting children with tainted Halloween candy, however, is more fiction than fact," quoting none other than Dr. Joel Best! The article continues that Best "said he has yet to find a case in which a stranger deliberately poisoned trick-or-treaters." This allegedly was such a case and the article was correct in saying it changed trick-or-treating forever. That's why it qualified for my sidebar.

Likewise, of course people have always feared stranger kidnappings of their children. But it was the Adam Walsh case that suddenly had covers of news magazines proclaiming 50,000 children were victims of such kidnappings each year when the actual figure was around 100, and the individual most responsible for spreading that horrific figure was the father of Adam Walsh.

All of these incidents had their origin in fears that go way back, even to the extent of being primordial—as with anything involving children. Toyota was Son of Audi 5000, but sudden unintended acceleration was an idea pushed by self-styled automobile safety groups before Audi. Cars are a bit magical to a lot of people. During the Toyota hysteria, I remember seeing a comment from a woman who obviously believed that the throttle is what propels the car, no engine necessary. Something always has to plant that seed that germinates, or pour out the fuel that explodes. Often we have no idea why something suddenly becomes a mass hysteria, whether in a school or nationwide. But sometimes there is something very specific, as with the Lexus accident near San Diego, which was not only horrible but captured on a 911 call, to which we can specifically point. And yet even that probably would have gone nowhere but for those two fast-and-loose Pulitzer-hungry reporters at the Los Angeles Times. *It takes what's been called "a perfect storm."*

An addendum to Michael Fumento's article "Runaway Hysteria."

Nowhere in the article does Mr. Fumento provide references to the discoveries by the NASA scientists presented at the CALCE (Center for Advanced Life Cycle Engineering) conference. In 2009 on the campus of my university my 2007 Subaru Tribeca (mileage 7,000) jumped into a mode of unintended acceleration. I floored the brake—to no avail. I had been sold a computer-driven car without mechanical linkages. It stopped only when I turned off the engine. I survived and so did the students who scattered. The dealer showed no surprise when I reported the incident. The 2007 Subaru carried the Toyota electronics. He offered to take back the car. Unwilling to let the dealer resell the car to someone else, I donated the car to our local high school's automotive technology program.

In 2010 I was one of the persons invited to testify before the National Academy of Sciences committee tackling the problem of sudden unintended acceleration.

In 2011 investigations by NASA scientists confirmed predications by the scientists at the CALCE center at the University of Maryland that tin whiskers on the acceleration position sensor (the mechanism under your foot sending wireless information to the brake: a crucial part of the engine control system) could cause intermittent failure—a significant safety hazard (http://www.calce.umd.edu/symposiums/ISTW2011.htm). A photo of a defective sensor was published by electrical engineers In *EE Times* (eetimes.com?document asp?doc_id=1264373). Also available on the Internet is a 2011 article by CALCE scientists B. Sood, M. Osterman, and M. Pecht, *Circuit World* Vol 37 no. 3 2011 p. 4–9, "Tin Whisker Analysis of Toyota's Electronic Throttle Controls" with figures from the acceleration mechanism of a Camry. More recently, in April 2014 , Toyota's response was covered in the *St. Louis Post Dispatch* by Todd C. Frankel, on-

line at http://stltoday.com/news/local/metro/ a-carbondale –professor-runaway-toyotas.

The best source of information on automotive electronic failure is CALCE: the Center for Advanced Life Cycle Engineering at the University of Maryland. Its website provides a window on continuing concerns of professional automotive engineers regarding electronic failures.

Eugenie V. Mielczarek
Emeritus Professor of Physics
George Mason University
Fairfax, Virginia

Skeptical Inquirer's editor seems quite impressed by "noted author, attorney, and investigator" Michael Fumento who "debunks" the recent "runaway Toyota hysteria." No scientist himself, Fumento has made a very good living "debunking" scientific orthodoxies, bashing government, and defending corporate interests.

Is it a coincidence that nearly all of his voluminous work supports the interests of corporate giants while scoffing at government regulation and the concerns of public interest groups? And who is paying for his work? There's an old saying, "Whose bread I eat, his song I sing."

I think I'll get a second opinion on the Toyota issue.

Jack Miller
Bellingham, Washington

SI Editor Kendrick Frazier replies:

This was a well-reported and heavily documented investigative article. In evaluating submissions we try our best to base our judgments on the merits of the work, not other factors.

Homeopathy

One thing that I have always told homeopathy supporters ("An Introduction to Homeopathy," September/October 2014) is: "If you believe that water carries with it the essence of what it was in contact with, the next time you take a drink of water, think of the fact that, at one time or another, every drop of water in the world has passed through animals' stomachs and out their back ends."

Ian McLaurin
Port Perry, Ontario, Canada

HAARP Conspiracy Theories

As the Air Force manager responsible for creating the HAARP Environmental Impact Statement (EIS) in 1993, I offer the following facts to augment Benjamin Radford's description of the HAARP conspiracy ("HAARP Conspiracy Theory 'Weather Super-Weapon' Program Shuts Down," News and Comment, September/October 2014).

1. Senator Stevens (R-AK) provided funds to a DARPA/AF/Navy management team through add-ons to Senate Appropriation Bills.

2. The Air Force declined to add the program to its budget.

3. The prime contractor, ARCO (Atlantic Richfield Oil Company) Power Technologies, Inc. (APTI), held patent #4,686,605 issued to Dr. Bernard Eastlund, a former APTI employee, which superficially resembled the design vetted by the EIS but, in fact, called for orders of magnitude higher power supposed to produce drastic, nonlinear changes in the ionosphere and atmosphere.

4. An outspoken opponent of HAARP, Dr. Nick Begich, son of Congressman Nick Begich (D-AK) who disappeared in a plane crash in 1972, self-published *Angels Don't Play This HAARP*, which has become the "bible" of the conspiracy.

The technical crux of the conspiracy view rests on distinguishing between "effective radiated power" (ERP) and actual radiated power. The HAARP antenna array design concentrates the site's available power into a narrow, steerable beam. Within the beam the power appears as if it were radiated by a much more powerful source—the ERP. The total power radiated to the ionosphere, however, cannot be greater than the site's available power, a fact that the conspiracy conveniently ignores.

John L. Heckscher
Wayland, Massachusetts

'Miracles' Questions

Joe Nickell's discussion of the "miracles" of Father Baker (July/August 2014) failed to address several of my long-standing questions.

First, the Catholic Church already has a huge pantheon of saints officially recognized and certified to deliver repeated miracles. Why then do church members in desperate straits deliver prayers not to these fully qualified saints but to a more recently deceased member of the church in the hope that they are qualified to ultimately achieve sainthood. Surely a risky gamble when the candidate for sainthood may have had some personal failing or peccadillo that could disqualify him or her.

Second, if large numbers of the devout pray to the candidate for sainthood without receiving a positive result, should this not weaken the claim for sainthood?

Third and last: Why are the miracles so limited in scope? For example, if a saint's intercession can heal a damaged eye, why can't the repair of tissue go a little further and regrow a lost one?

Stephen Bright
North Avoca
NSW, Australia

Measuring Earthquakes

In his letter in the September/October issue, Dan Gealt says that Robert Sheaffer committed a "blatant science error" in his article on Earthquake Lights. I think this should be regarded more leniently, as somewhat lax phraseology or over-abbreviation. It's true that the earthquake magnitude scale is logarithmic; this means, more precisely, that the magnitude is a (simple) logarithmic function of the earthquake energy. But then the energy is an exponential function of the magnitude, which is what Sheaffer meant and which he exemplified in the second part of his statement.

Gealt is correct that the energy of a magnitude 6 quake is greater than that of a magnitude 5 quake by more than the factor of ten mentioned by Sheaffer: the energy (and potential destructiveness) is approximately thirty-two times greater. The factor of ten refers to the shaking amplitude of the earthquake, not the energy. (See http://en.wikipedia.org/wiki/Moment_magnitude_scale.)

Bob Zarnke
Waterloo, Ontario,
Canada

CO_2 Correction

In the article "Some Popular Global Warming Factoids" (November/December 2014) author John Eades accidentally left out a few key words in a paragraph on page 53 under the "Exhaled CO_2…." subheading. Consequently the phrase a) "… the additional 346 litres is just what we absorbed from …" should really have been: b) "… the additional 346 litres is just what we regenerate from the carbon we absorbed from …." The implication of a) is that we absorb CO_2 directly from plant material, while in reality we absorb carbon from it. (The "closed loop" conclusion is not affected of course.)

[FEEDBACK

The letters column is a forum on matters raised in previous issues. **Letters should be no longer than 225 words**. Due to the volume of letters we receive, not all can be published. Send letters as email text (not attachments) to letters@csicop.org. In the subject line, provide your surname and informative identification, e.g.: "Smith Letter on Jones evolution article." Include your name and address at the end of the letter. You may also mail your letter to the editor to 944 Deer Dr. NE, Albuquerque, NM 87122.

SKEPTICAL ANNIVERSARIES

by Tim Farley

January 2, 1860: Urbain Le Verrier announced observational confirmation of his mathematical prediction of a planet he called Vulcan that was closer to the Sun than Mercury. He was incorrect; Einstein's theories later explained why.

January 2–3, 1925: After fraudulent spirit medium Mina "Margery" Crandon refused to appear with him on stage to be tested, Harry Houdini demonstrated her tricks on stage at Boston Symphony Hall.

January 5, 2005: Blogger Mike Masnick coined the term "Streisand Effect" to describe situations where attempts to shut down criticism can actually draw more attention. Skeptic activists regularly depend on this in the Internet era.

January 10, 1955: *Inherit the Wind*, a fictionalized version of the Scopes "monkey trial" was first performed on stage in Dallas, Texas.

January 30, 2010: The first 10:23 mass homeopathic overdose demonstration was held by many skeptic groups around the world.

February 2, 1870: Both the Cardiff Giant and P. T. Barnum's replica of it were declared to be fraudulent in court.

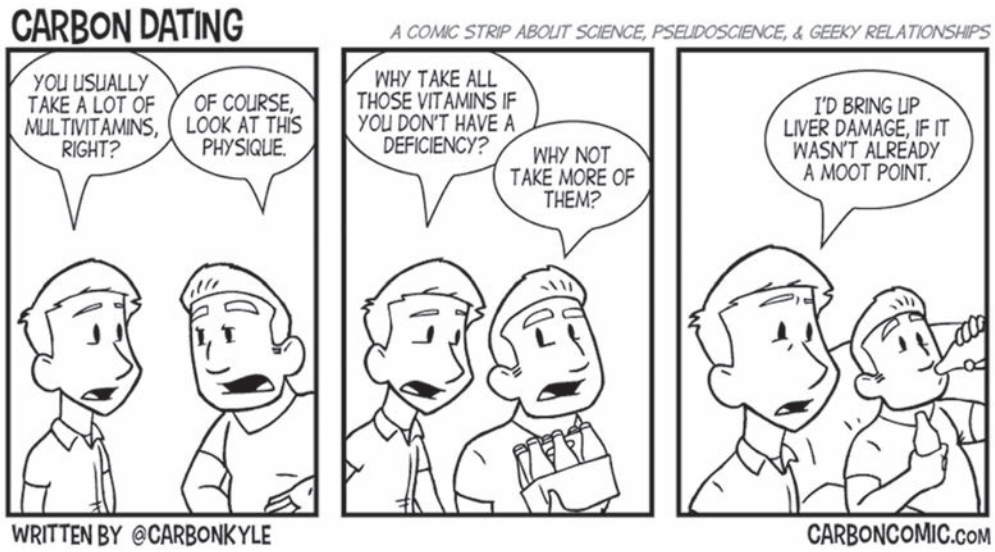
February 2, 2010: Medical journal *The Lancet* retracted Andrew Wakefield's flawed 1998 study that started a dangerous public scare that the MMR vaccine causes autism.

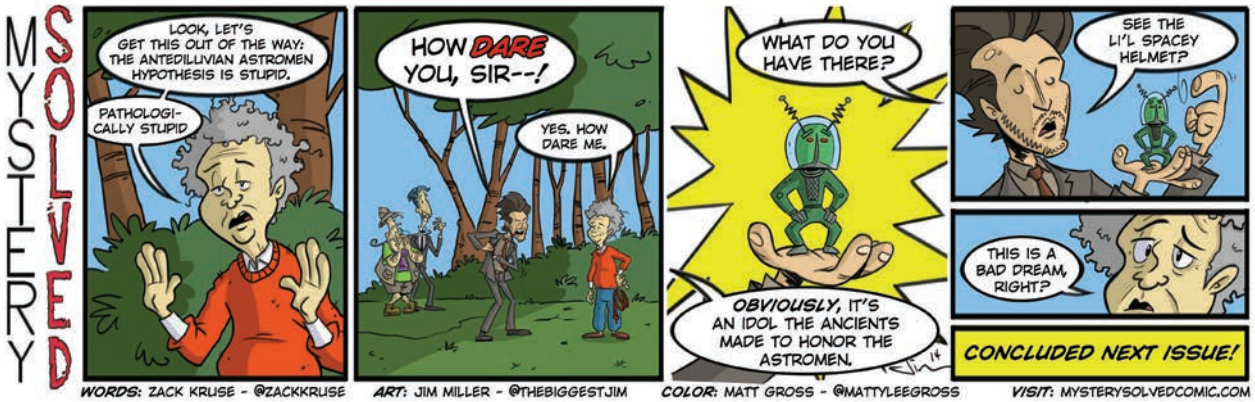
February 13, 1995: Federal marshals and church lawyers raided former Scientologist Dennis Erlich's home in an attempt to quell the online release of confidential church materials. This was part of a years-long battle colloquially known as "Scientology versus the Internet."

February 20, 1905: The Supreme Court of the U.S. upheld the states' rights to pass compulsory vaccination laws in the case of *Jacobson v. Massachusetts*.

February 25, 1820: An attempt by Felix Walker to "speak for Buncombe" (a county in North Carolina) was shouted down in Congress. This is the origin of the word *bunkum* to refer to nonsense, as Walker's speeches were often nonsensical.

Tim Farley is the creator of the website whatstheharm.net and blogs at skeptools.com. He is a past fellow of the James Randi Educational Foundation.


CARBON DATING
A COMIC STRIP ABOUT SCIENCE, PSEUDOSCIENCE, & GEEKY RELATIONSHIPS
YOU USUALLY TAKE A LOT OF MULTIVITAMINS, RIGHT?
OF COURSE, LOOK AT THIS PHYSIQUE.
WHY TAKE ALL THOSE VITAMINS IF YOU DON'T HAVE A DEFICIENCY?
WHY NOT TAKE MORE OF THEM?
I'D BRING UP LIVER DAMAGE, IF IT WASN'T ALREADY A MOOT POINT.
WRITTEN BY @CARBONKYLE
CARBONCOMIC.COM


MYSTERY SOLVED
LOOK, LET'S GET THIS OUT OF THE WAY: THE ANTEDILLUVIAN ASTROMEN HYPOTHESIS IS STUPID.
PATHOLOGICALLY STUPID
HOW DARE YOU, SIR--!
YES. HOW DARE ME.
WHAT DO YOU HAVE THERE?
OBVIOUSLY, IT'S AN IDOL THE ANCIENTS MADE TO HONOR THE ASTROMEN.
SEE THE LI'L SPACEY HELMET?
THIS IS A BAD DREAM, RIGHT?
CONCLUDED NEXT ISSUE!
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Cleveland Skeptics Joshua Hunt, Co-Organizer, www.clevelandskeptics.org

South Shore Skeptics (SSS) Cleveland and counties. Jim Kutz. Tel.: 440 942-5543; Email: jimkutz@earthlink.net. PO Box 5083, Cleveland, OH 44101 www.southshoreskeptics.org

Association for Rational Thought (ART) Cincinnati. Roy Auerbach, president. Tel: (513)-731-2774, Email: raa@cinci.rr.com. PO Box 12896, Cincinnati, OH 45212. www.cincinnatiskeptics.org

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The organizations listed above have aims similar to those of the Committee for Skeptical Inquiry but are independent and autonomous. Representatives of these organizations cannot speak on behalf of CSI. Please send updates to Barry Karr, P.O. Box 703, Amherst NY 14226-0703.
International affiliated organizations listed at www.csicop.org.

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